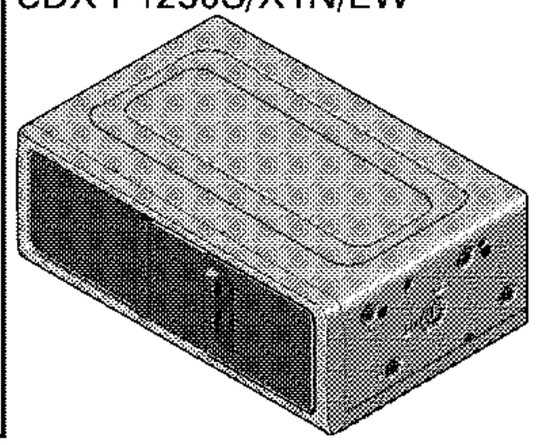
Service Manual

PIONEER®
The Art of Entertainment

CDX-P1230S/X1N/EW



ORDER NO.
CRT2114

MULTI-COMPACT DISC PLAYER

CDX-P1230S X1N/EW
CDX-P1230S X1N/UC
CDX-P1230S X1N/ES

COMPACT disc DIGITAL AUDIO

● **See the separate manual CX-653(CRT1916) for the CD mechanism description, disassembly and circuit description.**

● **The CD mechanism employed in this model is one of C6 series.**

CONTENTS

1. SAFETY INFORMATION 3
2. EXPLODED VIEWS AND PARTS LIST 4
3. SCHEMATIC DIAGRAM 16
4. PCB CONNECTION DIAGRAM 24
5. ELECTRICAL PARTS LIST 30
6. ADJUSTMENT 33
7. GENERAL INFORMATION 40
   7.1 IC 40
   7.2 DIAGNOSIS 44
      7.2.1 DISASSEMBLY 44
      7.2.2 TEST MODE 45
   7.3 BLOCK DIAGRAM 48
8. OPERATIONS AND SPECIFICATIONS 49

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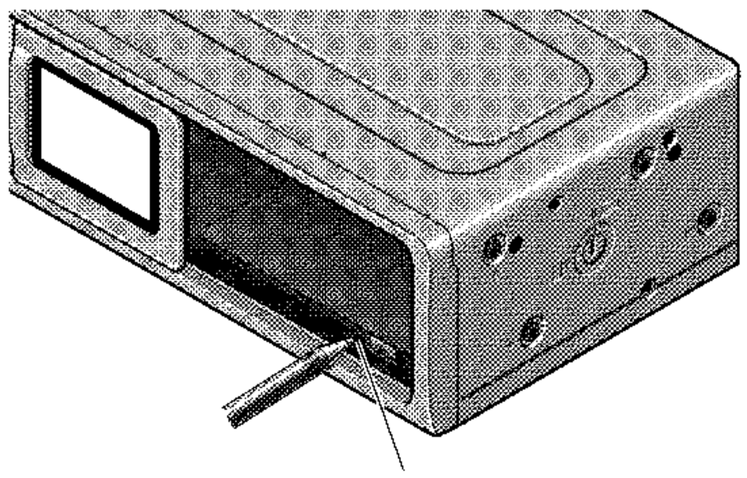
Pressing the clear button



If the power does not switch on or if the compact disc player does not operate when the button on the multi-CD controller is pressed, or if the multi-CD controller display is incorrect, press this button on the player with the tip of a pencil to restore normal operation. (This button is located inside the door.) **Always press the clear button on the multi-CD controller, too, after pressing this button.**

- If the clear button is pressed when the player contains a magazine or the ignition switch is set to the ON or ACC position, the CD title display and ITS memory are cleared.

8.2 SPECIFICATIONS

System ..... Compact disc audio system
Usable discs ..... Compact Disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Power source ..... 14.4 V DC
(10.8 — 15.1 V allowable)
Max. current consumption ..... 1.0 A
Weight ..... 2.2 kg
Dimensions ..... 261 (W) × 94 (H) × 174 (D) mm

Audio

Frequency characteristics ..... 5 — 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 92 dB (1 kHz) (IEC-A Network)
Distortion ..... 0.005 %
Dynamic range ..... 90 dB (1 kHz)
Output level ..... 1,000 mV (1 kHz, 0 dB)
Number of channels ..... 2 (stereo)

Note:

Specifications and design are subject to possible modification without prior notice due to improvements.

Sistema ..... Sistema audio Compact Disc
Dischi compatibili ..... Compact Disc
Formato del segnale ..... Frequenza di campionatura: 44,1 kHz
Numero di quantizzazione di bit: 16; lineare
Alimentazione ..... 14,4 V c.c.
(10,8 — 15,1 V ammessi)
Massimo consumo di corrente ..... 1,0 A
Peso ..... 2,2 kg
Dimensioni ..... 261 (L) × 94 (A) × 174 (P) mm

Audio

Risposta in frequenza ..... 5 — 20.000 Hz (±1 dB)
Rapporto segnale/rumore ..... 92 dB (1 kHz) (IEC pesato A)
Distorsione ..... 0,005 %
Gamma dinamica ..... 90 dB (1 kHz)
Livello d'uscita ..... 1.000 mV (1 kHz, 0 dB)
Numero dei canali ..... 2 (stereo)

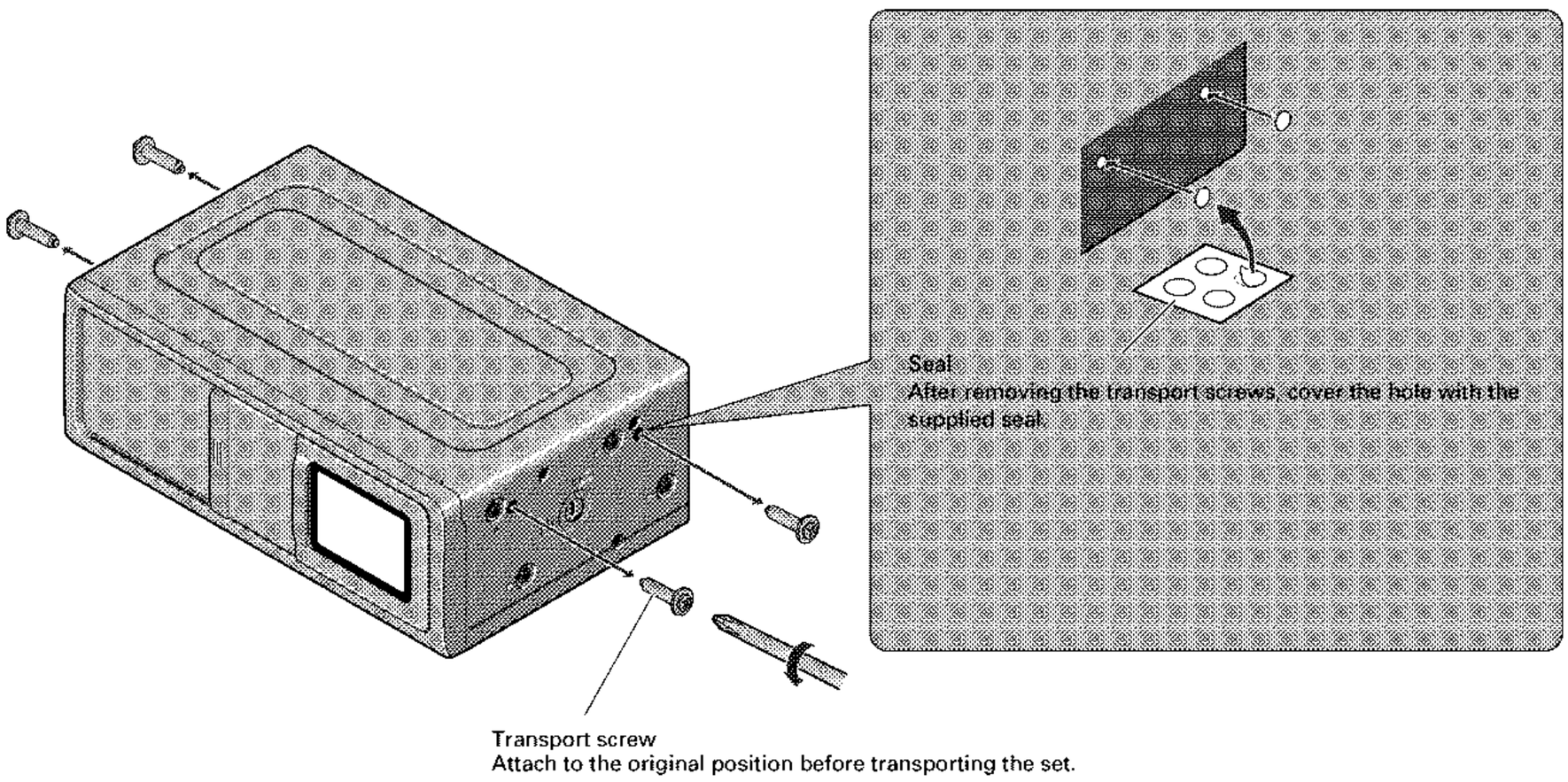
Nota:

A causa delle continue migliorie, le caratteristiche tecniche e costruttive potranno subire modifiche senza preavviso.

● CD Player Service Precautions

1. For pickup unit(Service)(CXX1235) handling, please refer to"Disassembly"(CX-653 Service Manual CRT1916).
   During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the pickup unit(see page 34) since these screws protects the mechanism during transport, be sure to affix it when it is transported for repair, etc.

Transportation of multi-CD player


Seal
After removing the transport screws, cover the hole with the supplied seal.
Transport screw
Attach to the original position before transporting the set.

A transport screw has been attached to the set in order to protect it during transportation. After removing the transport screws, cover the hole with the supplied seal. Be sure to remove the transport screw before mounting the set. The removed transport screw should be retained in the accessory bag for use the next time the set is transported.

1. SAFETY INFORMATION

1.1 CDX-P1230S/X1N/UC

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health and Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1.2 CDX-P1230S/X1N/EW

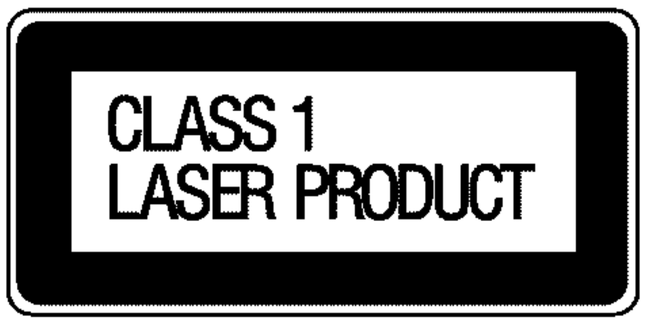
1. Safety Precautions for those who Service this Unit.

- **Follow the adjustment steps (see pages 33 through 39)in the service manual when servicing this unit. When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

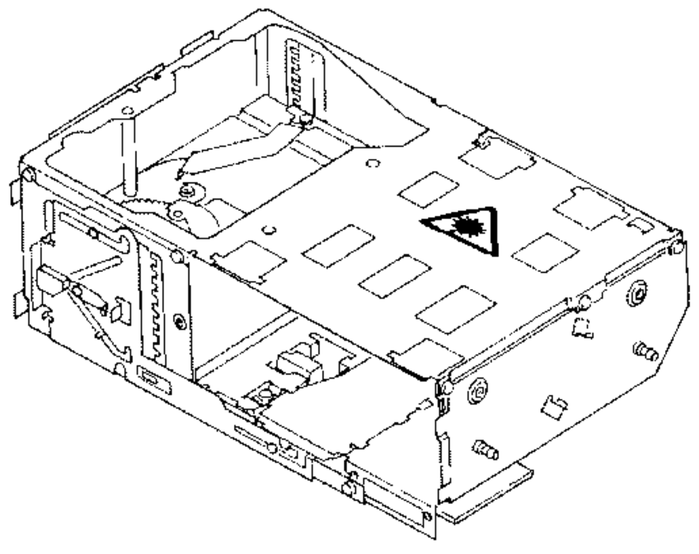
Caution:

1. **During repair or tests, minimum distance of 13cm from the focus lens must be kept.**
2. **During repair or tests, do not view laser beam for 10 seconds or longer.**

2. A "CLASS 1 LASER PRODUCT" label is affixed to the rear of the player.



3. The triangular label is attached to the mechanism unit frame.



4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

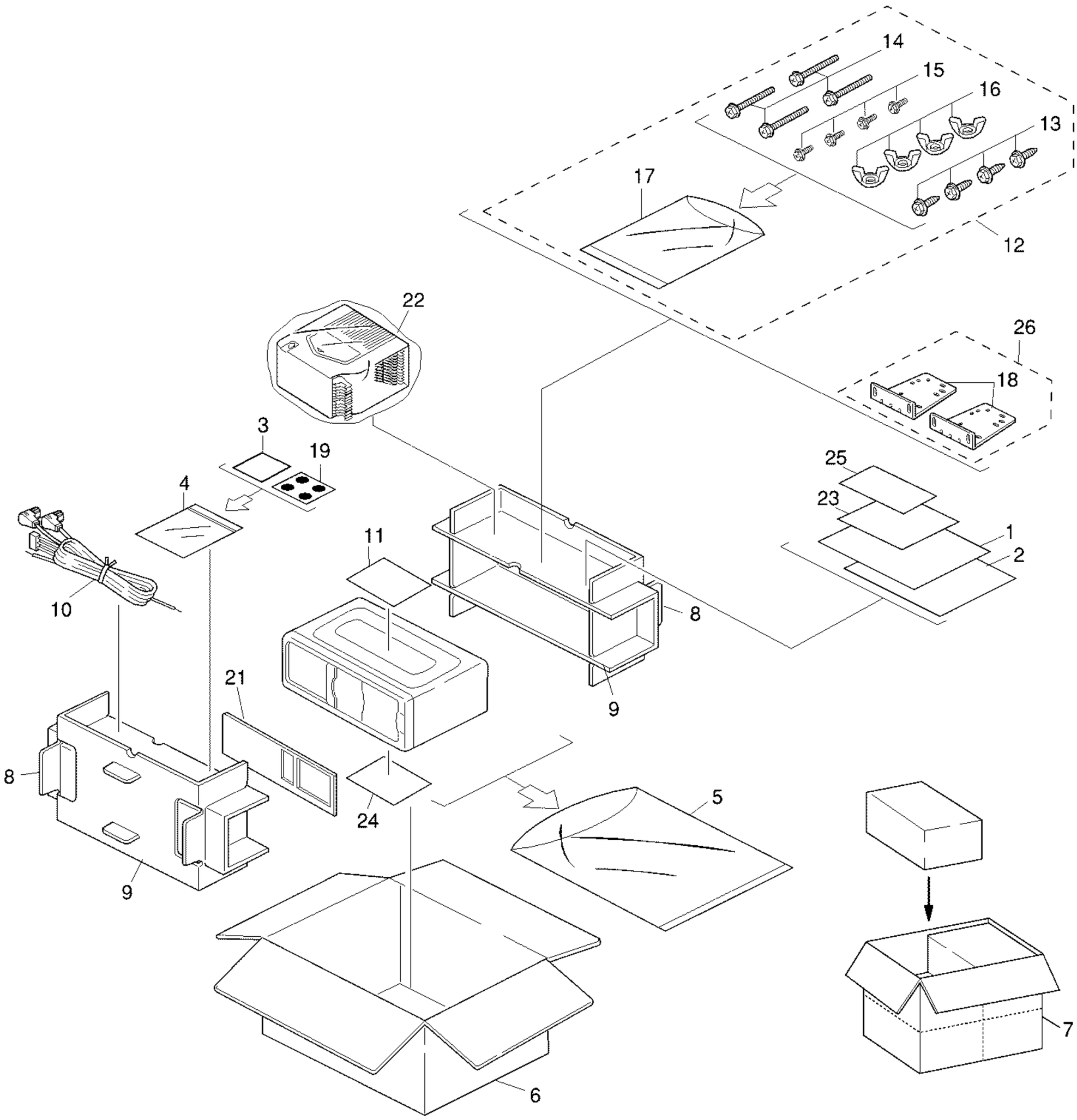


Fig. 1

NOTE:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.

● PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.		
			CDX-P1230S/X1N/EW	CDX-P1230S/X1N/UC	CDX-P1230S/X1N/ES
*	1	Owner's Manual	CRD2542	CRD2541	CRD2544
	2	Owner's Manual	CRD2543	Not used	CRB1414
*	3	Caution Card	CRP1090	CRP1090	CRP1090
*	4	Polyethylene Bag	CEG1099	CEG1099	CEG1099
	5	Polyethylene Bag	CEG1026	CEG1174	CEG1026
	6	Carton	CHG3404	CHG3406	CHG3405
	7	Contain Box	CHL3404	CHL3406	CHL3405
	8	Protector	CHP1835	CHP1835	CHP1835
	9	Protector	CHP1836	CHP1836	CHP1836
	10	Cord	CDE5445	CDE5446	CDE5446
*	11	Caution Card	CRP1166	CRP1164	CRP1164
	12	Screw Assy	CEA1962	CEA1962	CEA1962
	13	Screw	CBA1295	CBA1295	CBA1295
	14	Screw	HMB60P500FMC	HMB60P500FMC	HMB60P500FMC
	15	Screw	HMF40P080FZK	HMF40P080FZK	HMF40P080FZK
	16	Nut	NF60FMC	NF60FMC	NF60FMC
*	17	Polyethylene Sheet	CNM5458	CNM5458	CNM5458
*	18	Angle	CNB2238	CNB2238	CNB2238
	19	Seal	CNM5741	CNM5741	CNM5741
	20	•••••			
	21	Spacer	CHW1552	CHW1552	CHW1552
	22	Magazine Assy	CXB2336	CXB2336	CXB2336
*	23	Caution Card	Not used	ARY1048	Not used
*	24	Caution Card	CRP1167	CRP1165	CRP1165
*	25	Warranty Card	CRY1087	Not used	Not used
	26	Angle Assy	CXB1963	CXB1963	CXB1963

● Owner's Manual

Model	Part No.	Language
CDX-P1230S/X1N/EW	CRD2542	English, Italian, French
	CRD2543	German, Dutch, Spanish
CDX-P1230S/X1N/UC	CRD2541	English, French
CDX-P1230S/X1N/ES	CRD2544	English, Spanish, Portuguese, Arabic
	CRB1414	Chinese

2.2 EXTERIOR

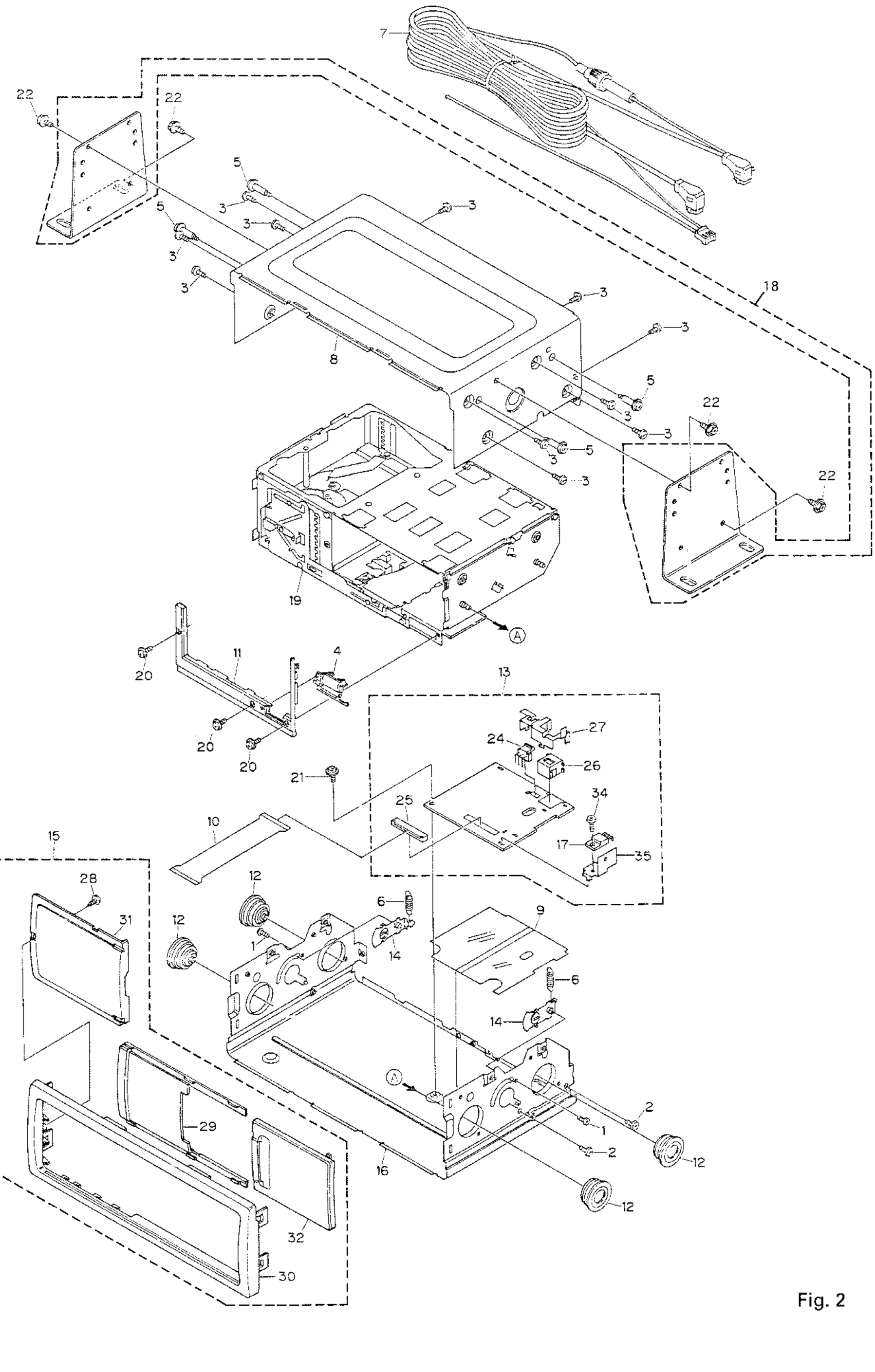


Fig. 2

(1) EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.
1	Screw	BMZ20P040FMC
2	Screw	BMZ26P040FMC
3	Screw	BMZ30P040FZK
4	Button	CAC4632
5	Screw	CBA1353
6	Spring	CBH1862
7	Cord	See Contrast table(2)
8	Upper Case	CNB2241
9	Insulator	CNM4640
10	PCB	CNP4972
11	Panel	CNS3929
12	Damper	CNV5227
13	Extension Unit	See Contrast table(2)
14	Arm Unit	CXA8606
15	Grille Assy	See Contrast table(2)
16	Case Unit	See Contrast table(2)
17	Transistor(Q1903)	2SD2396
18	Angle Assy	CXB1963
19	CD Mechanism Module	See Contrast table(2)
20	Screw	IMS20P035FZK
21	Screw	IMS26P040FMC
22	Screw	HMF40P080FZK
23	•••••	
24	Plug(CN1901)	CKS-460
25	Connector(CN1697)	CKS2233
26	Connector(CN1699)	CKS3407
27	Holder	CNC6417
28	Screw	BPZ20P080FMC
29	Door	See Contrast table(2)
30	Grille	See Contrast table(2)
31	Panel	See Contrast table(2)
32	Door Assy	See Contrast table(2)
33	•••••	
34	Screw	BMZ26P060FMC
35	Holder	CNC6416

(2) CONTRAST TABLE

CDX-P1230S/X1N/EW, CDX-P1230S/X1N/UC and CDX-P1230S/X1N/ES are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.		
		CDX-P1230S/X1N/EW	CDX-P1230S/X1N/UC	CDX-P1230S/X1N/ES
7	Cord	CDE5445	CDE5446	CDE5446
13	Extension Unit	CWX2220	CWX2207	CWX2207
15	Grille Assy	CXB2083	CXB2084	CXB2084
16	Case Unit	CXB2063	CXA9323	CXA9323
19	CD Mechanism Module	CXK4535	CXK4530	CXK4530
29	Door	CAT1913	CAT1924	CAT1924
30	Grille	CNS4713	CNS4716	CNS4716
31	Panel	CNS4722	CNS4721	CNS4721
32	Door Assy	CXB2108	CAT1925	CAT1925

2.3 CD MECHANISM MODULE

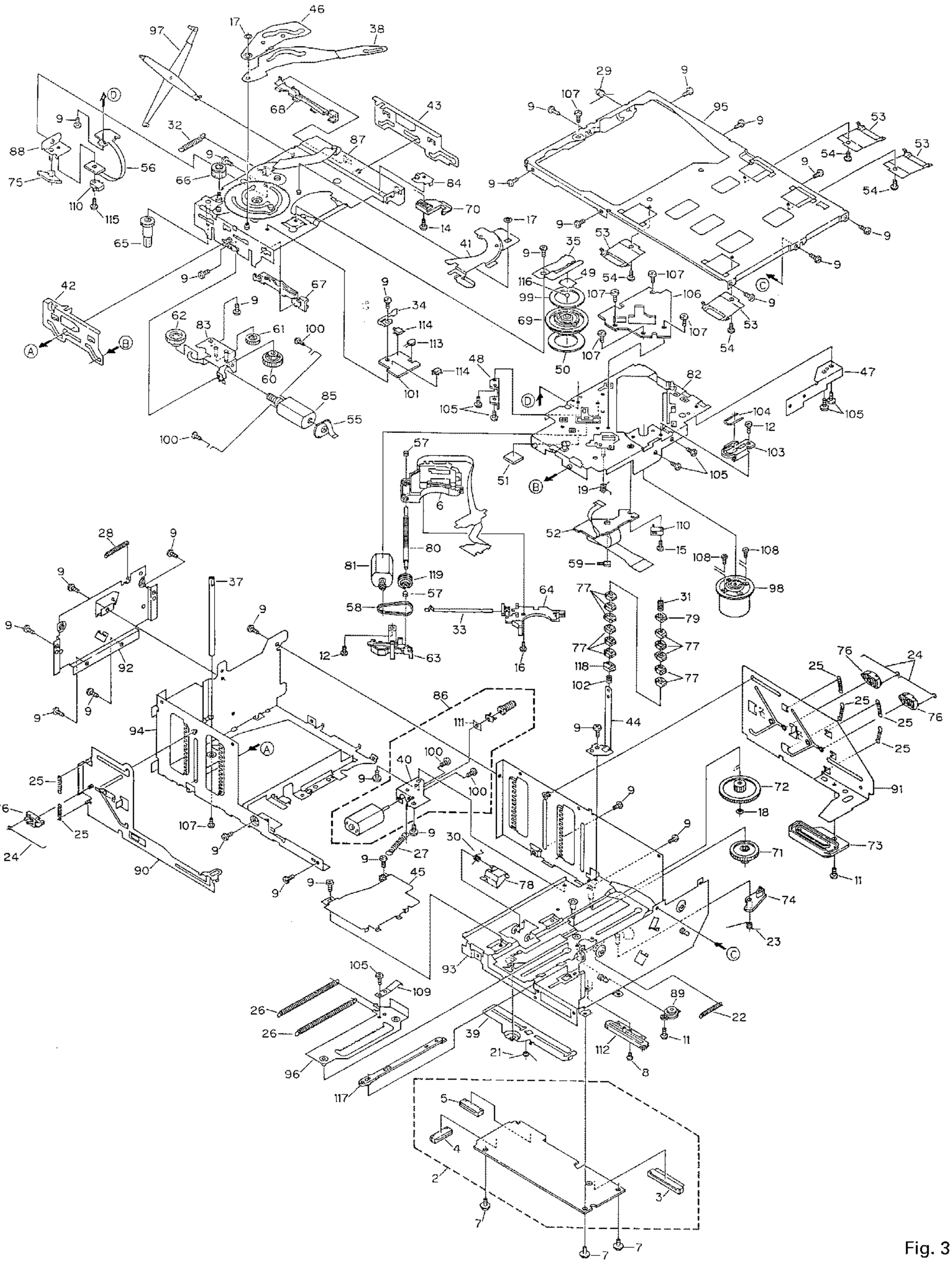


Fig. 3

(1)CD MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	CBA1369
	2	CD Core Unit	See Contrast table(2)
	3	Connector(CN701)	CKS1968
	4	Connector(CN801)	CKS3484
	5	Connector(CN101)	CKS3486
	6	Pickup Unit(Service)	CXX1235
	7	Screw	IMS26P040FMC
	8	Screw	JFZ17P020FNI
	9	Screw(M2×2.5)	CBA1037
	10	•••••	
	11	Screw(M2×2.5)	CBA1077
	12	Screw(M2×2.5)	CBA1085
	13	•••••	
	14	Screw(M2×4)	CBA1176
	15	Screw	CBA1229
	16	Screw(M2×4)	CBA1362
	17	Washer	CBF1002
	18	Washer	CBF1038
	19	Spring	CBH1822
	20	•••••	
	21	Spring	CBH1827
	22	Spring	CBH1828
	23	Spring	CBH1829
	24	Spring	CBH1853
	25	Spring	CBH1854
	26	Spring	CBH1867
	27	Spring	CBH1868
	28	Spring	CBH1891
	29	Spring	CBH1892
	30	Spring	CBH1919
	31	Spring	CBH1930
	32	Spring	CBH1931
	33	Spring	CBL1241
	34	Spring	CBL1242
	35	Spring	CBL1249
	36	•••••	
	37	Shaft	CLA2852
	38	Arm	CNC6181
	39	Lever	CNC6194
	40	Bracket	CNC6292
	41	Lever	CNC6534
	42	Lever	CNC6535
	43	Lever	CNC6536
	44	Holder	CNC7449
	45	Cover	CNC7452
	46	Arm	CNC6799
*	47	Holder	CNC6819
*	48	Holder	CNC6827
	49	Spacer	CNM4879
	50	Sheet	CNM5118
*	51	Sheet	CNM5020
	52	PCB	CNP4205
	53	Spring	CBL1319
	54	Screw	CBA1387
	55	PCB	CNP4382
	56	PCB	CNP4453
	57	Bearing	CNR1415
	58	Belt	CNT1053
	59	Photo Transistor(Q851)	PT4800
	60	Gear	CNV4403
	61	Gear	CNV4404
	62	Gear	CNV4406
	63	Cover	CNV4411
	64	Holder	CNV4412
	65	Gear	CNV4416
	66	Gear	CNV4417
	67	Rail(White)	CNV4419
	68	Rail(Black)	CNV4420
	69	Clamper	CNV4421
	70	Lever	CNV4422
	71	Gear	CNV4423
	72	Gear	CNV4827
	73	Rack	CNV4828
	74	Arm	CNV4426
	75	Arm	CNV4490
	76	Arm	CNV4511
	77	Guide	CNV4597
	78	Arm	CNV4670
	79	Guide	CNV4722
	80	Screw	CLA2786
	81	Motor Unit(M854)(Carriage)	CXA9131
	82	Chassis Unit	CXB2245
	83	Bracket Unit	CXB2261
	84	Plate Unit	CXB2262
	85	Motor Unit(M853)(Tray)	CXA9139
	86	Motor Unit(M852)(ELV)	CXB1077
	87	Chassis	CXB2268
	88	Bracket Unit	CXA9211
	89	Damper Unit	CXA7159
	90	Lever Unit	CXB2273

Mark	No.	Description	Part No.
	91	Lever Unit	CXB2493
	92	Bracket Unit	CXA9215
	93	Magazine Holder Unit	CXB2270
	94	Frame Unit	CXB2272
	95	Frame	CNC6917
	96	Lever Unit	CXB2275
	97	Arm Unit	CXB2276
	98	Motor Unit(M851)(Spindle)	CXA9371
	99	Plate	CNC7015
	100	Screw	JFZ20P025FNI
*	101	PCB	CNP4537
	102	Spring	CBH2070
	103	Holder	CNV4761
	104	Spring	CBH1948
	105	Screw(M2×2)	CBA1250
	106	Plate	CNC6914
	107	Screw(M2×2.5)	CBA1041
	108	Screw	JGZ17P022FZK
	109	Spring	CBL1315
	110	Switch(S853,854)	CSN1012
	111	Spacer	CBF1070
	112	Volume(VR801)	CCW1021
	113	LED(D851)	CN504-2
	114	Switch(S851,852)	CSN1033
	115	Screw	CBA1054
	116	Ball	CNR1189
	117	Guide	CNV5186
	118	Guide	CNV5193
	119	Pulley	CNV4405

(2) CONTRAST TABLE

CDX-P1230S/X1N/EW, CDX-P1230S/X1N/UC and CDX-P1230S/X1N/ES are constructed the same except for the following:

Mark No.	Symbol and Description	Part No.		
		CDX-P1230S/X1N/EW	CDX-P1230S/X1N/UC	CDX-P1230S/X1N/ES
2	CD Core Unit	CWX2178	CWX2177	CWX2177

2.4 MAGAZINE ASSY

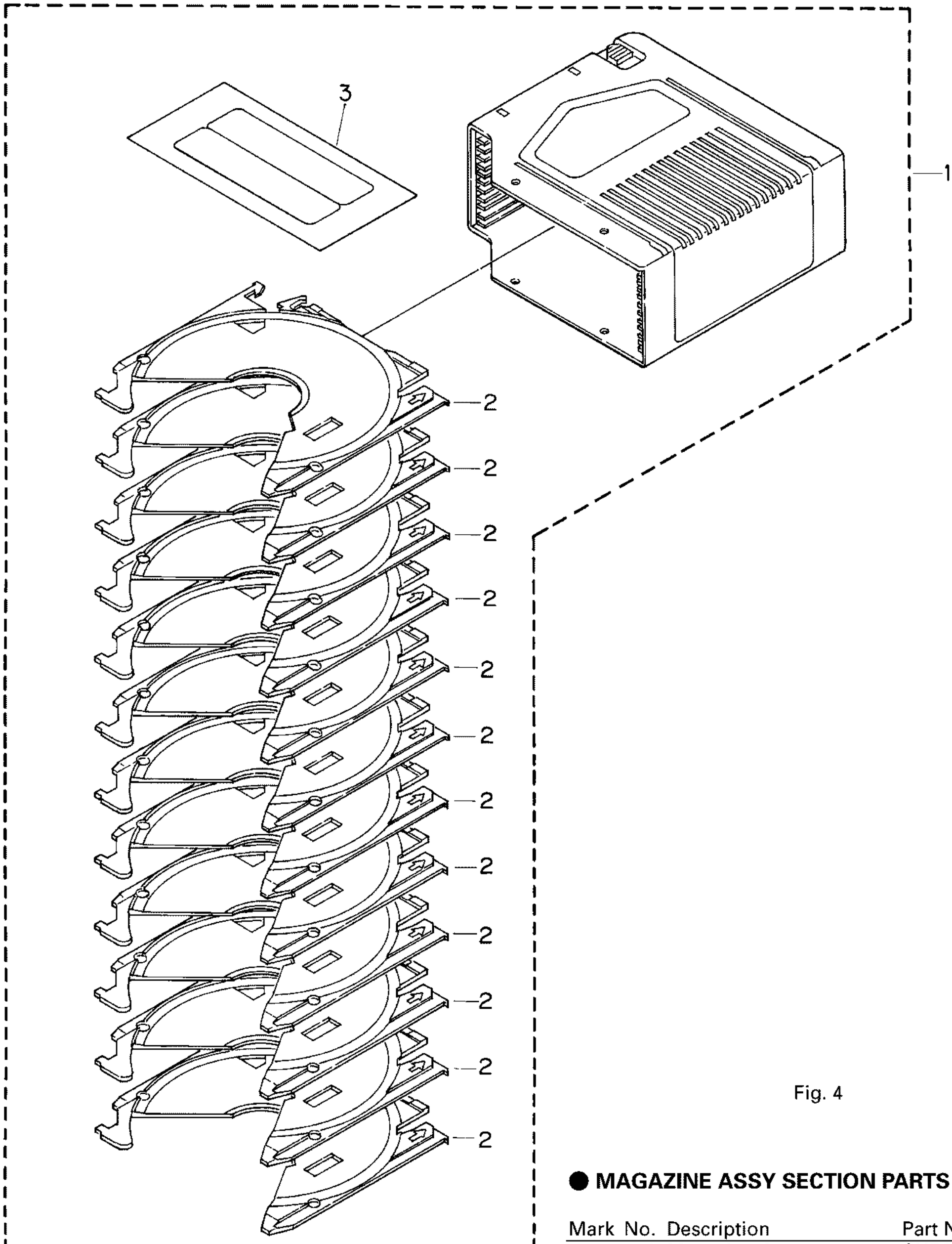


Fig. 4

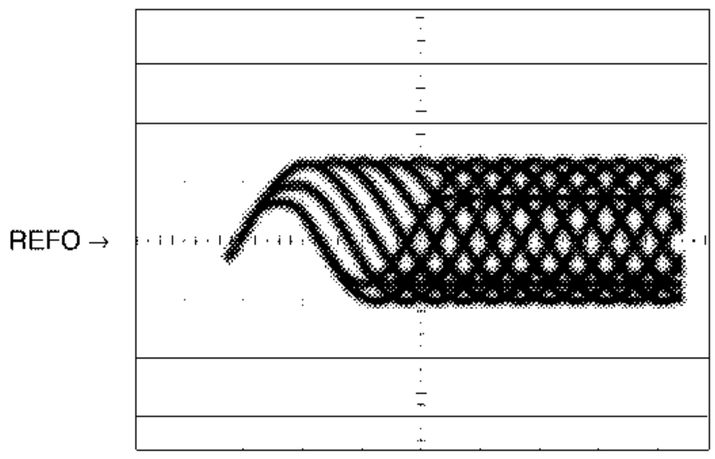
● MAGAZINE ASSY SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Magazine Assy	CXB2336
	2	Tray	CNV4900
*	3	Label	CRW1349

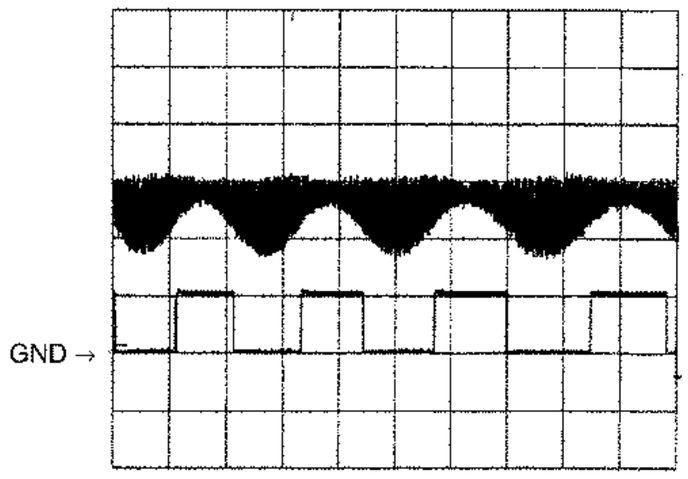
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

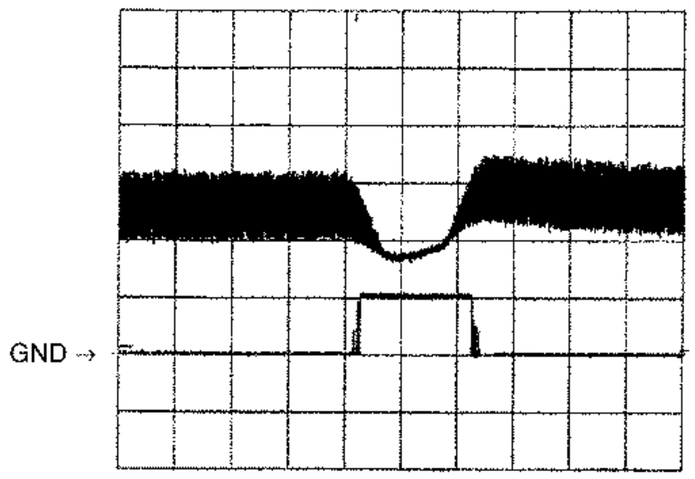
① RFO 0.5V/div. 0.5µs/div.
Normal mode: play



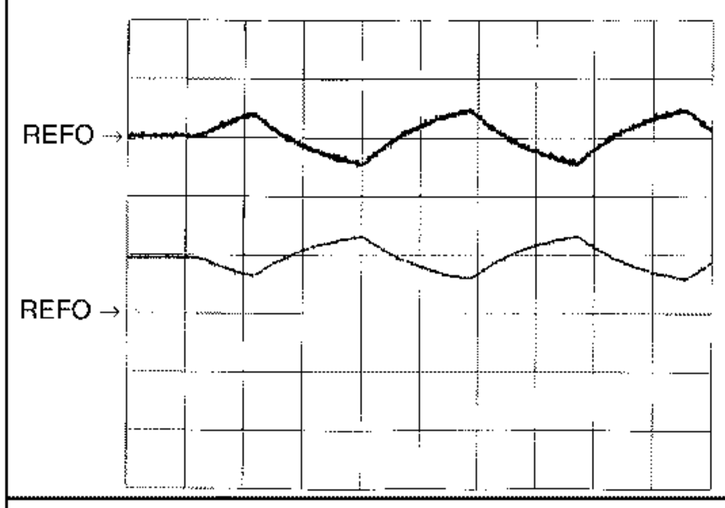
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Test mode: Tracking open



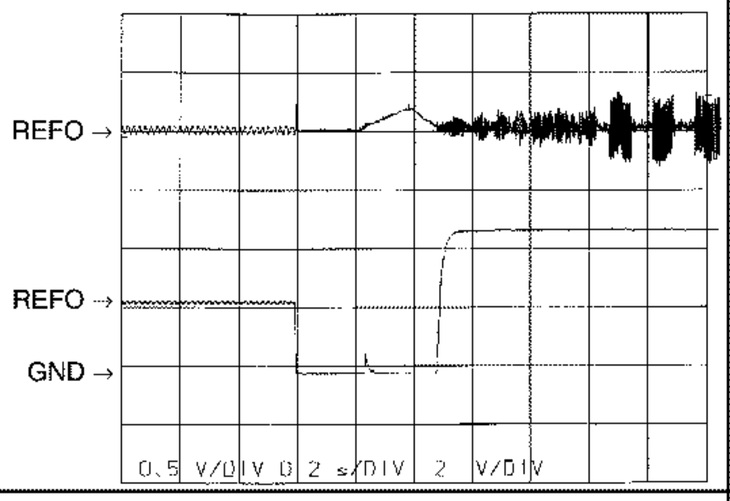
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Normal mode: The defect part passes 800µm



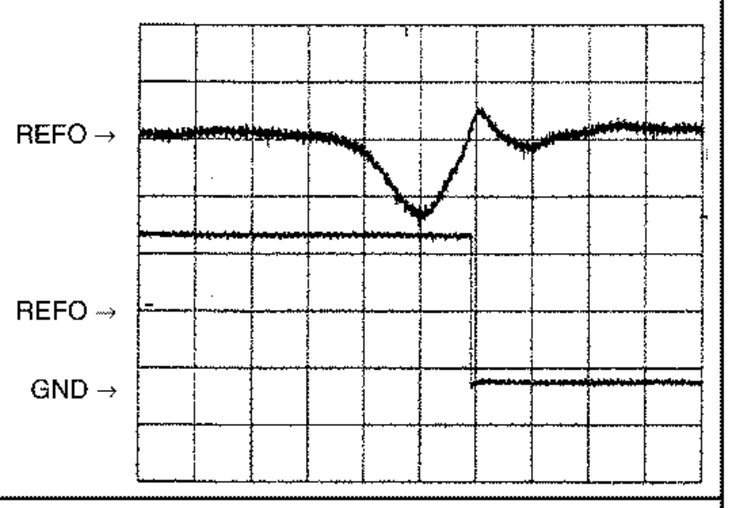
③ CH1: FD 0.5V/div.
④ CH2: FOP 2V/div. 0.2s/div.
Test mode: No disc, Focus close



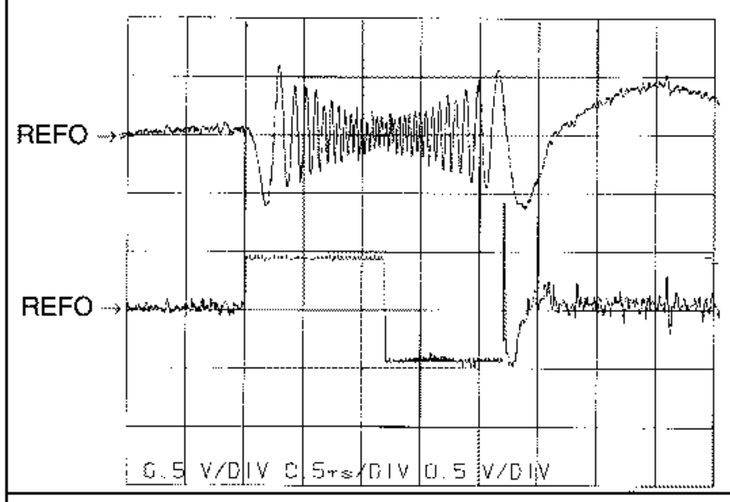
③ CH1: FD 0.5V/div.
⑤ CH2: FOK 2V/div. 0.2s/div.
Normal mode: Focus close



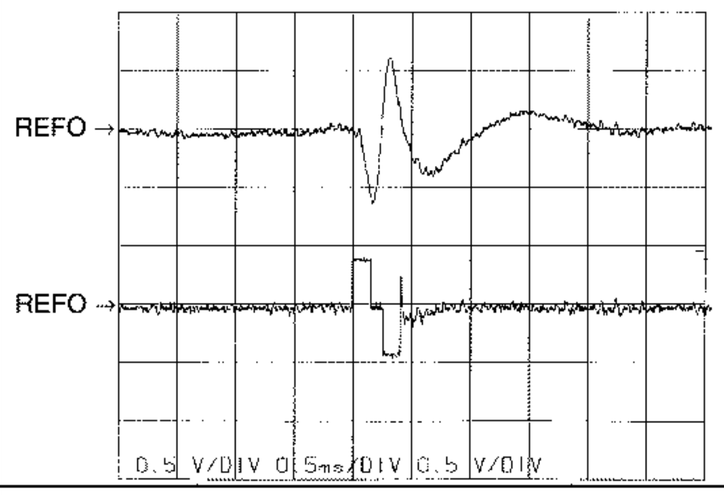
⑥ CH1: FEY 0.5V/div.
⑦ CH2: XSI 2V/div. 1ms/div.
Normal mode: Focus close



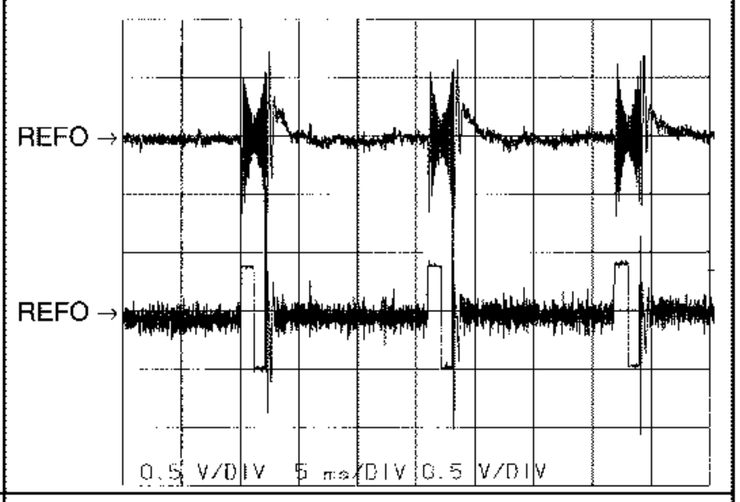
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TD 0.5V/div. 0.5ms/div.
Test mode: 32 tracks jump (FWD)



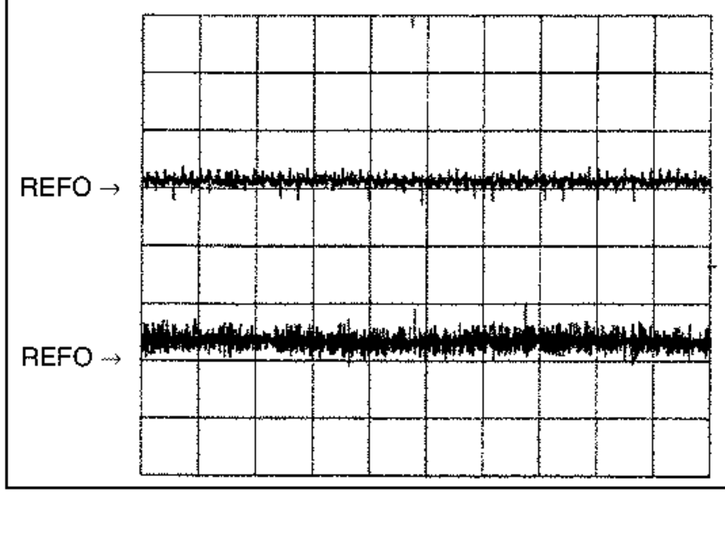
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TD 0.5V/div. 0.5ms/div.
Test mode: Single jump (FWD)



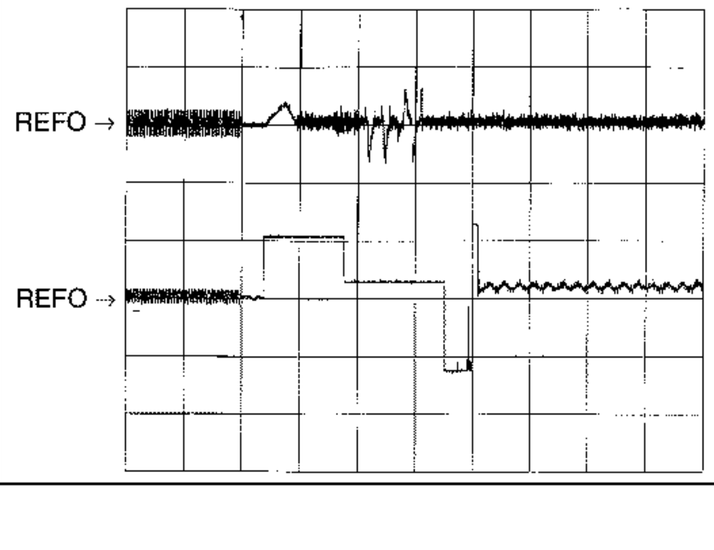
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TD 0.5V/div. 5ms/div.
Test mode: 100 tracks jump (FWD)



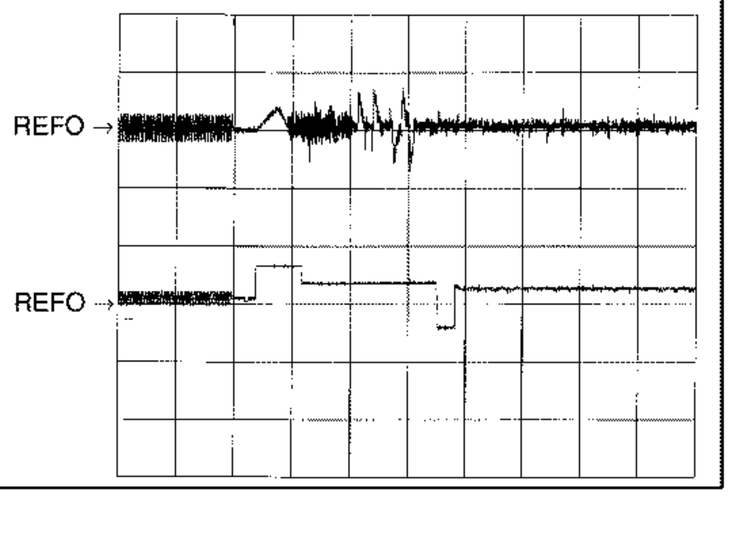
⑥ CH1: FEY 0.1V/div.
③ CH2: FD 0.2V/div. 20ms/div.
Normal mode: Play



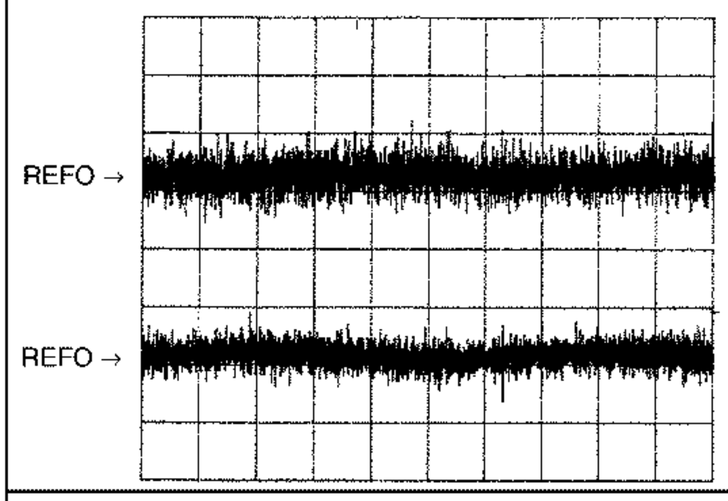
③ CH1: FD 0.5V/div.
⑩ CH2: MDYA 1V/div. 0.5s/div.
Normal mode: Focus close (12cm)



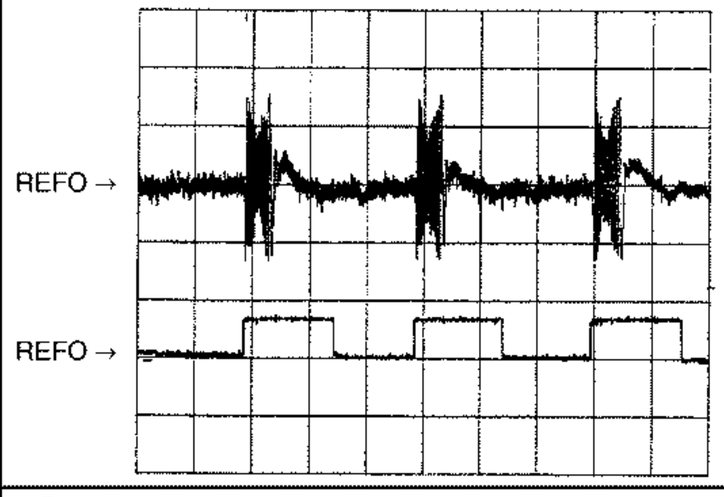
③ CH1: FD 0.5V/div.
⑩ CH2: MDYA 1V/div. 0.5s/div.
Normal mode: Focus close (8cm)



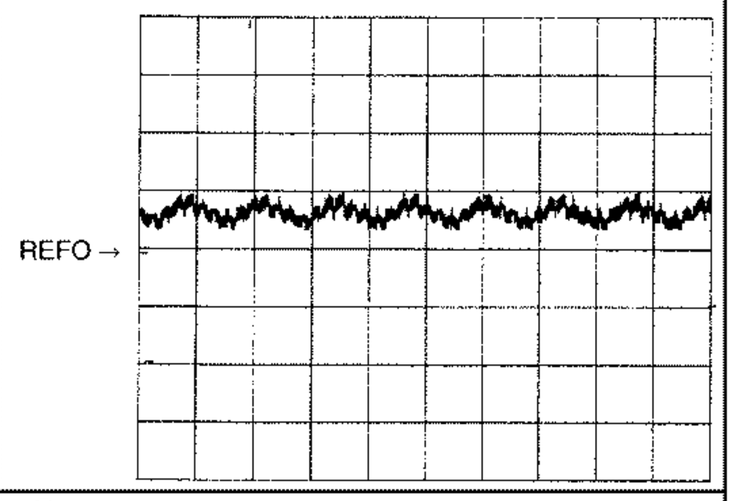
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TD 0.2V/div. 20ms/div.
Normal mode: play



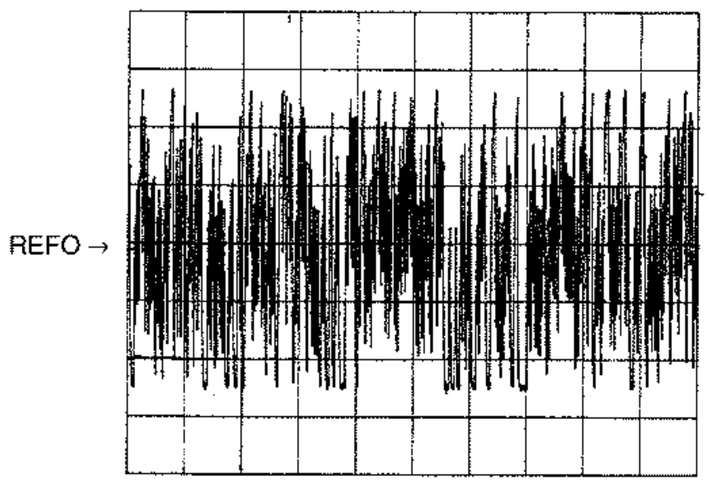
⑧ CH1: TEY 0.5V/div.
⑪ CH2: SD 0.5V/div. 5ms/div.



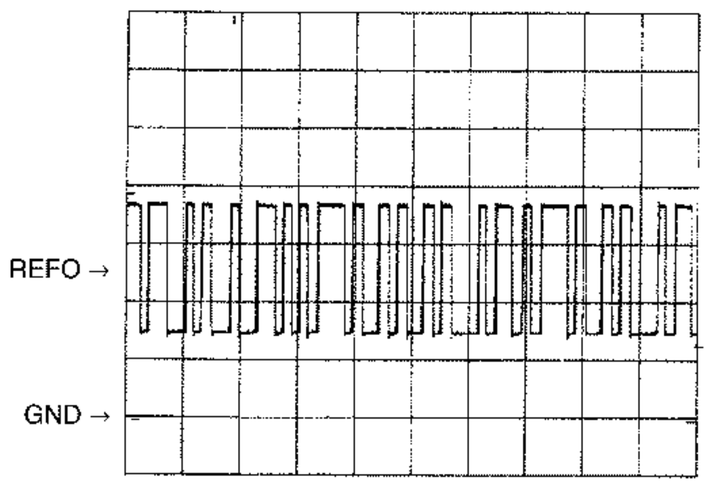
⑩ MDYA 0.5V/div. 0.1s/div.
Normal mode: Play (12cm)



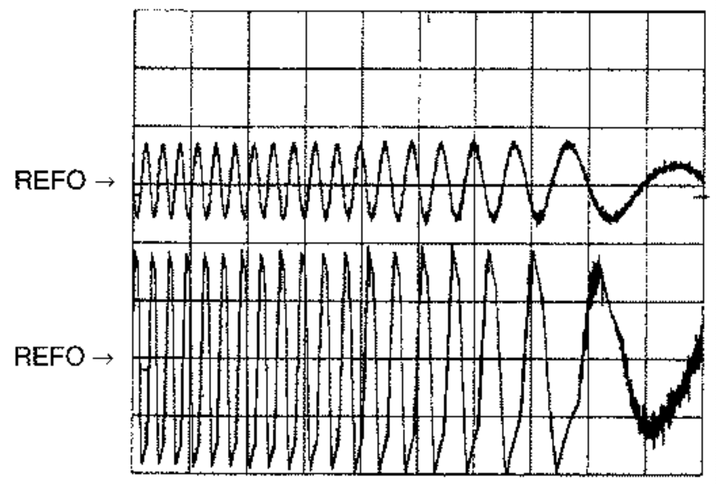
⑩ MDYA 0.5V/div. 10ms/div.
Long Search (12cm)



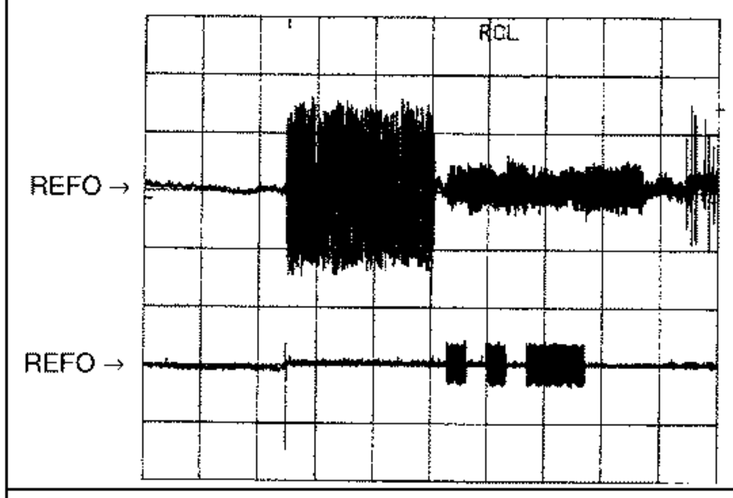
⑫ EFM 1V/div. 5µs/div.
Play



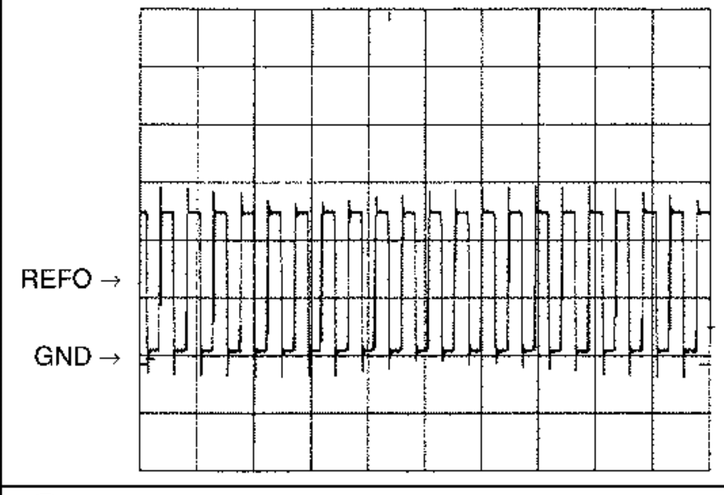
⑧ CH1: TEY 1V/div.
⑬ CH2: TEC 1V/div. 2ms/div.
Test mode: Focus close
Tracking open



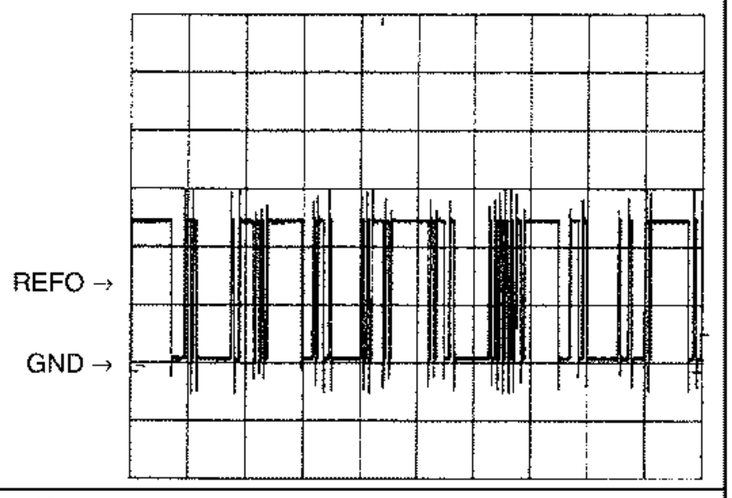
⑧ CH1: TEY 0.5V/div.
⑥ CH2: FEY 0.5V/div. 0.2s/div.
Normal mode: AGC after focus close



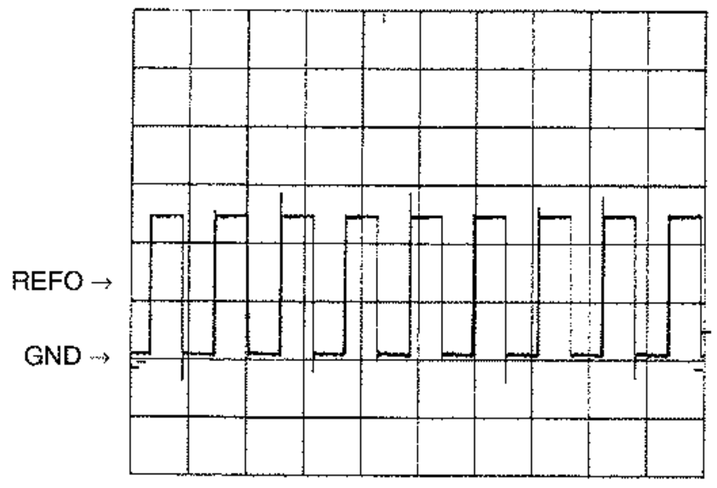
⑭ SCKO 2V/div. 1µs/div.
Play



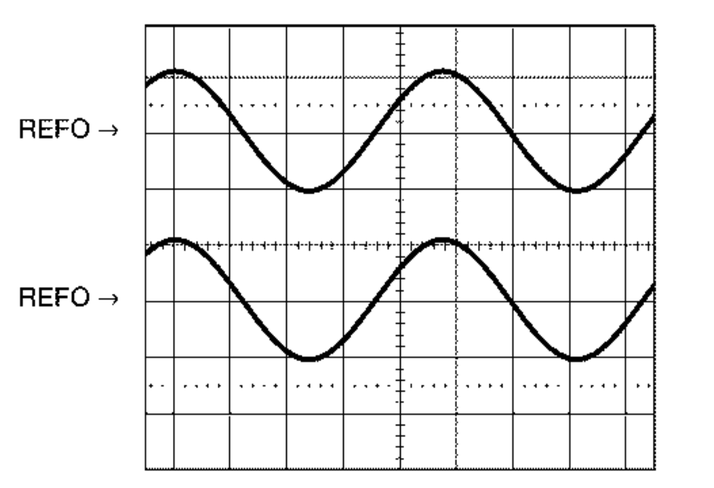
⑮ Dout 2V/div. 10µs/div.
Play



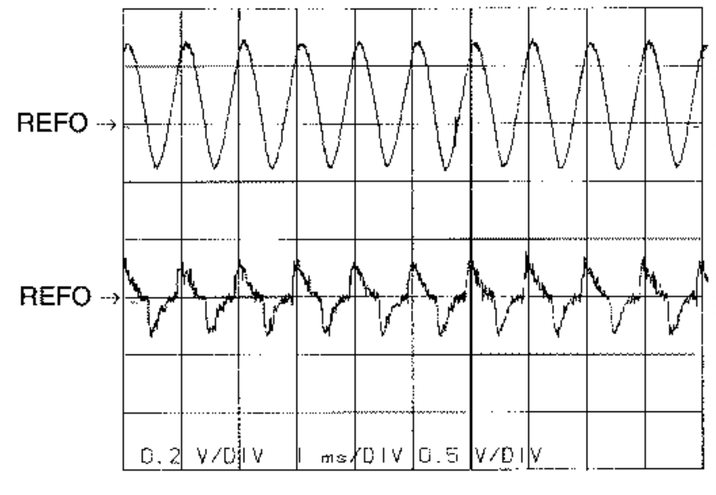
⑯ LRCK 2V/div. 20µs/div.

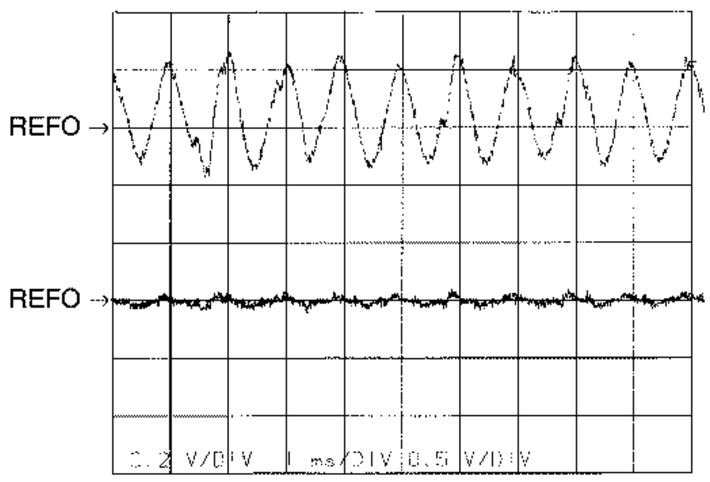
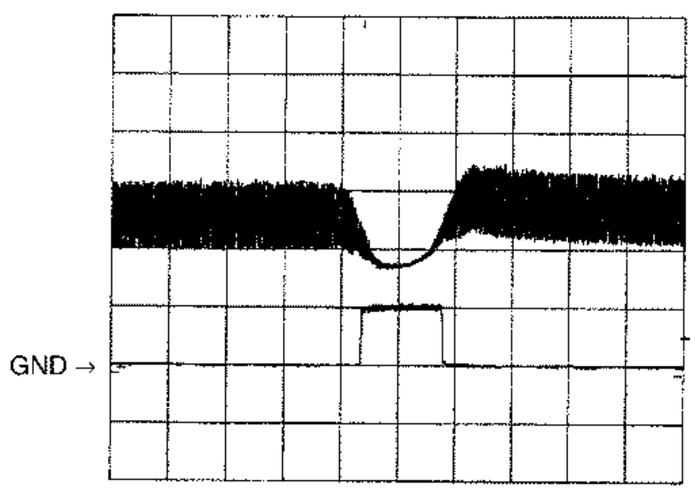
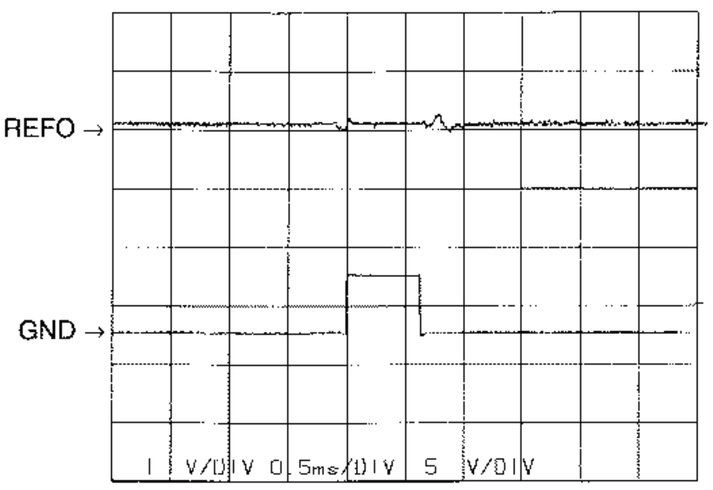


⑱ CH1: R OUT 1V/div.
⑰ CH2: L OUT 1V/div. 0.2ms/div.
Normal mode: Play (1kHz 0dB)



⑥ CH1: FEY 0.2V/div.
③ CH2: FD 0.5V/div. 1ms/div.
Normal mode: During AGC

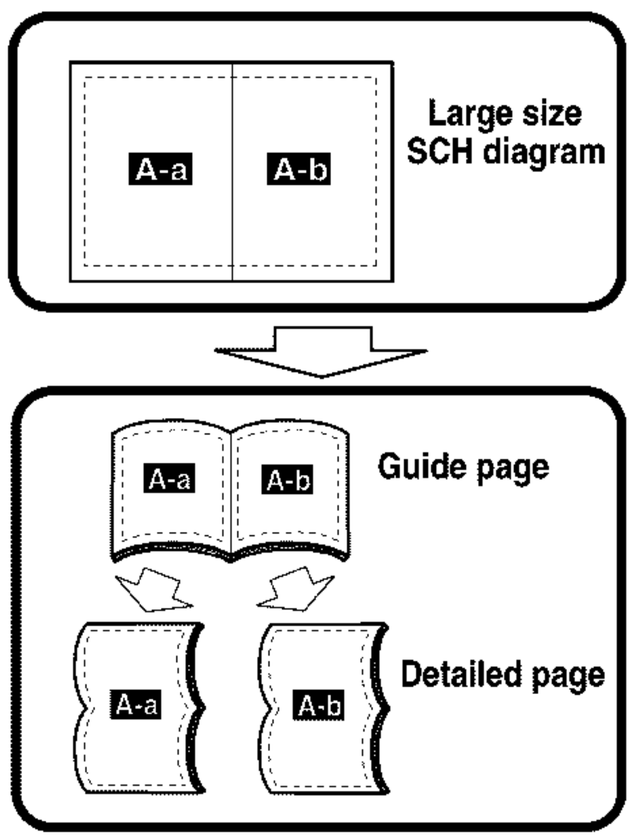


⑧ CH1: TEY 0.2V/div. ⑨ CH2: TD 0.5V/div. 1ms/div. Normal mode: During AGC 	① CH1: RFO 1V/div. ⑲ CH2: HOLD 5V/div. 0.5ms/div. Normal mode: The defect part passes 800µm 	③ CH1: FD 1V/div. ⑲ CH2: HOLD 5V/div. 0.5ms/div. Normal mode: The defect part passes 800µm 

3. SCHEMATIC DIAGRAM

3.1 CD MECHANISM MODULE(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



A-a

A CD CORE UNIT

PICKUP UNIT(SERVICE) (CXX1235)

HOLOGRAM UNIT

FOCUS ACT.

TRACKING ACT.

CN101

RF AMP/AUTO POWER CONTROL

IC101 UPC2572GS

REFO

5VA

AGND

5VD

DGND

SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE

C PHOTO PCB

F SWITCH PCB

D PCB UNIT

E MOTOR PCB

IC301 BA6997FM

ACTUATOR & MOTOR DRIVER

PGND

VD

GND

5V REGULATOR

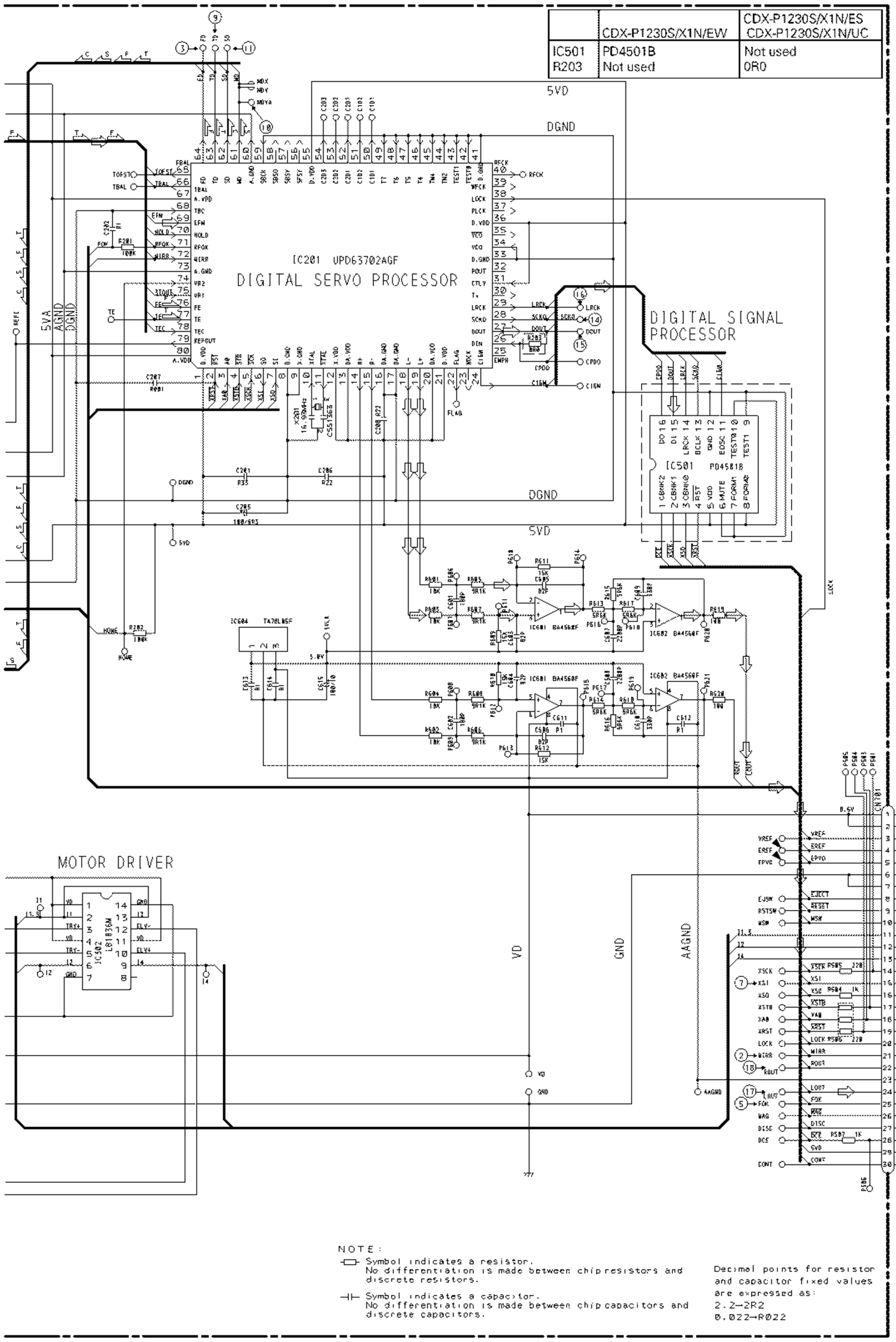
IC701 PQ05YZ61

(SP)

A C D E F

A-b

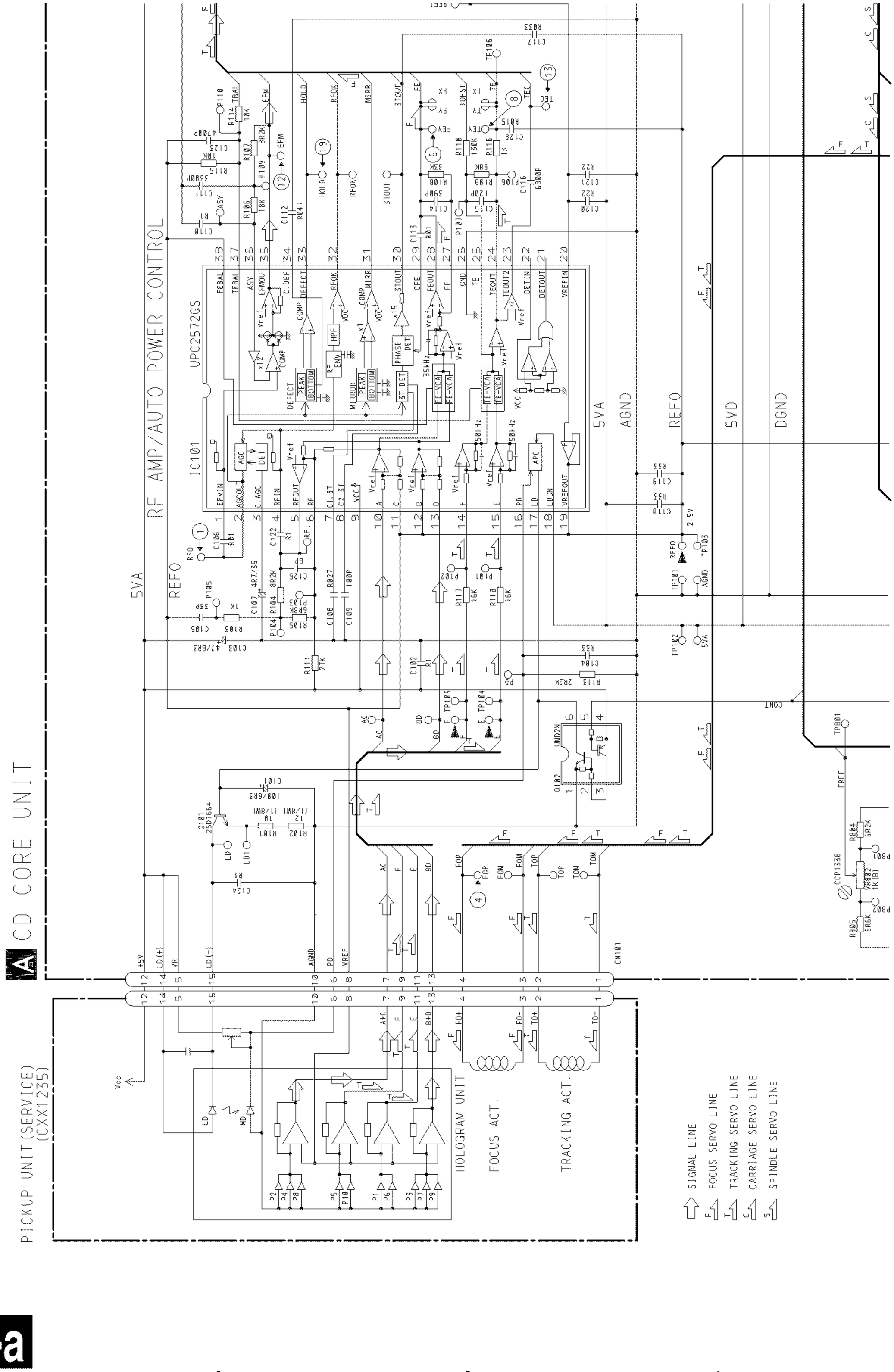
	CDX-P1230S/X1N/EW	CDX-P1230S/X1N/ES CDX-P1230S/X1N/UC
IC501 R203	PD4501B Not used	Not used 0R0



NOTE :
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 5


RF AMP/AUTO POWER CONTROL
IC101
UPC2572GS
REFO
5VA
AGND
5VD
DGND
CD CORE UNIT
PICKUP UNIT(SERVICE)
(CXX1235)
HOLOGRAM UNIT
FOCUS ACT.
TRACKING ACT.
SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE

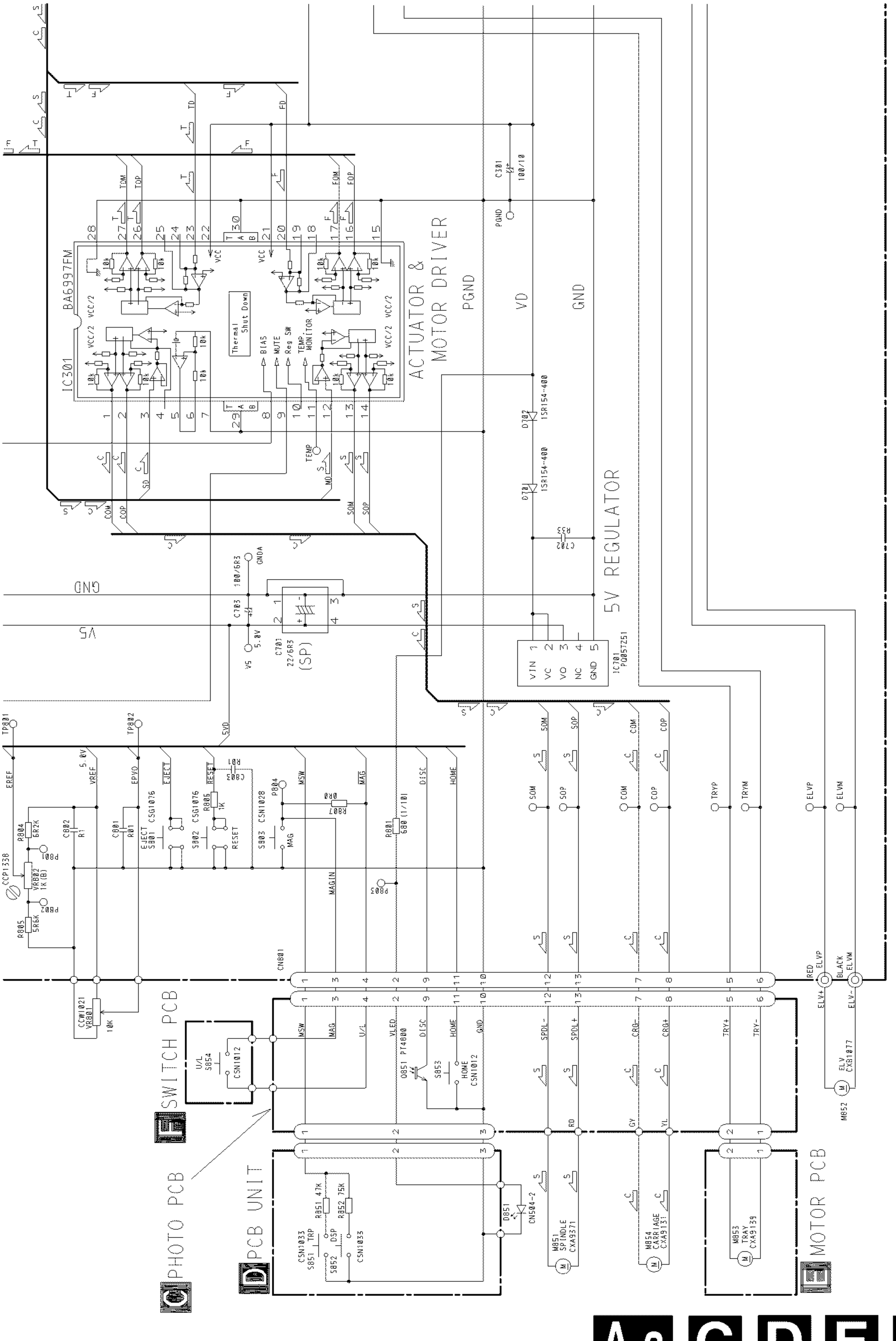
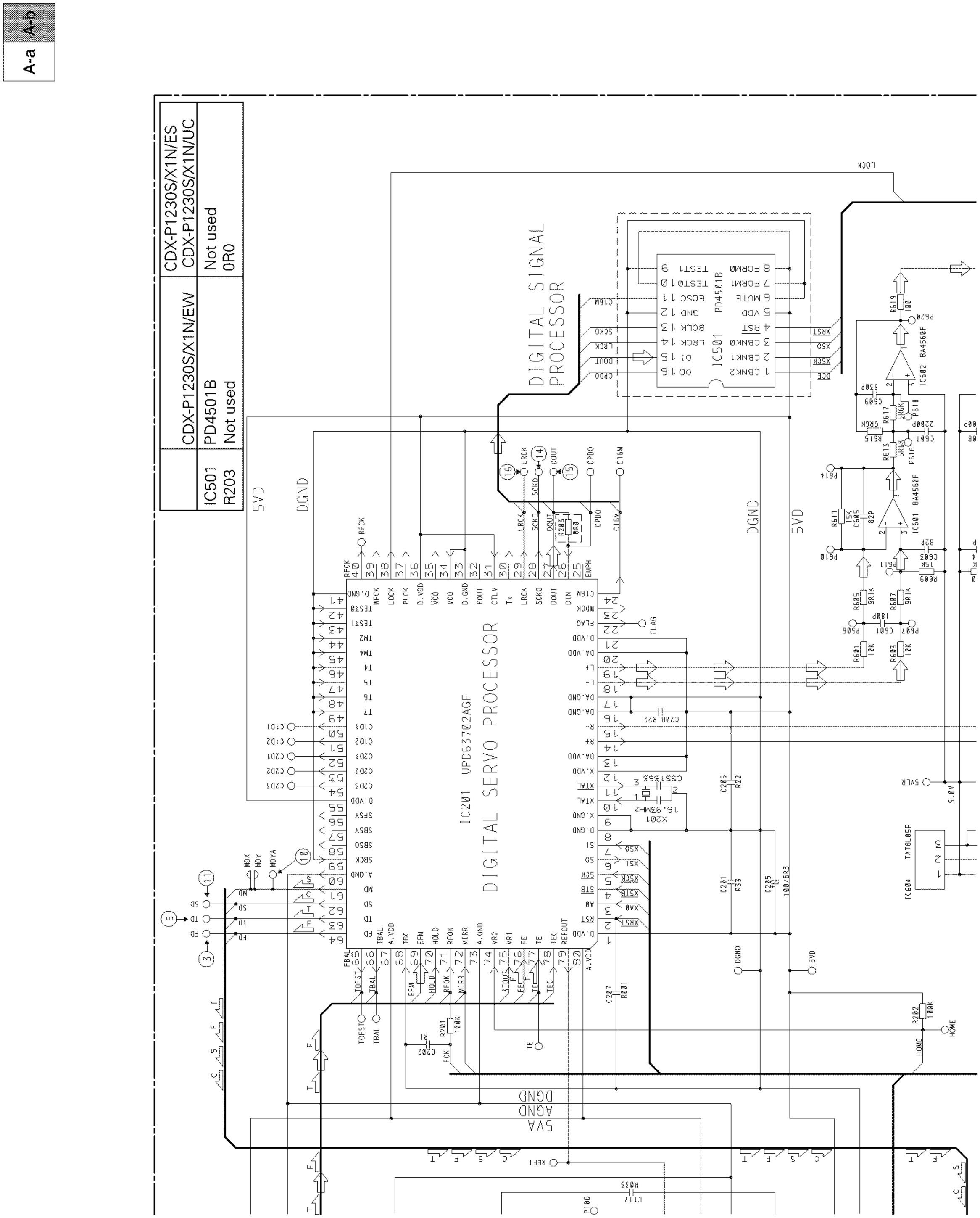
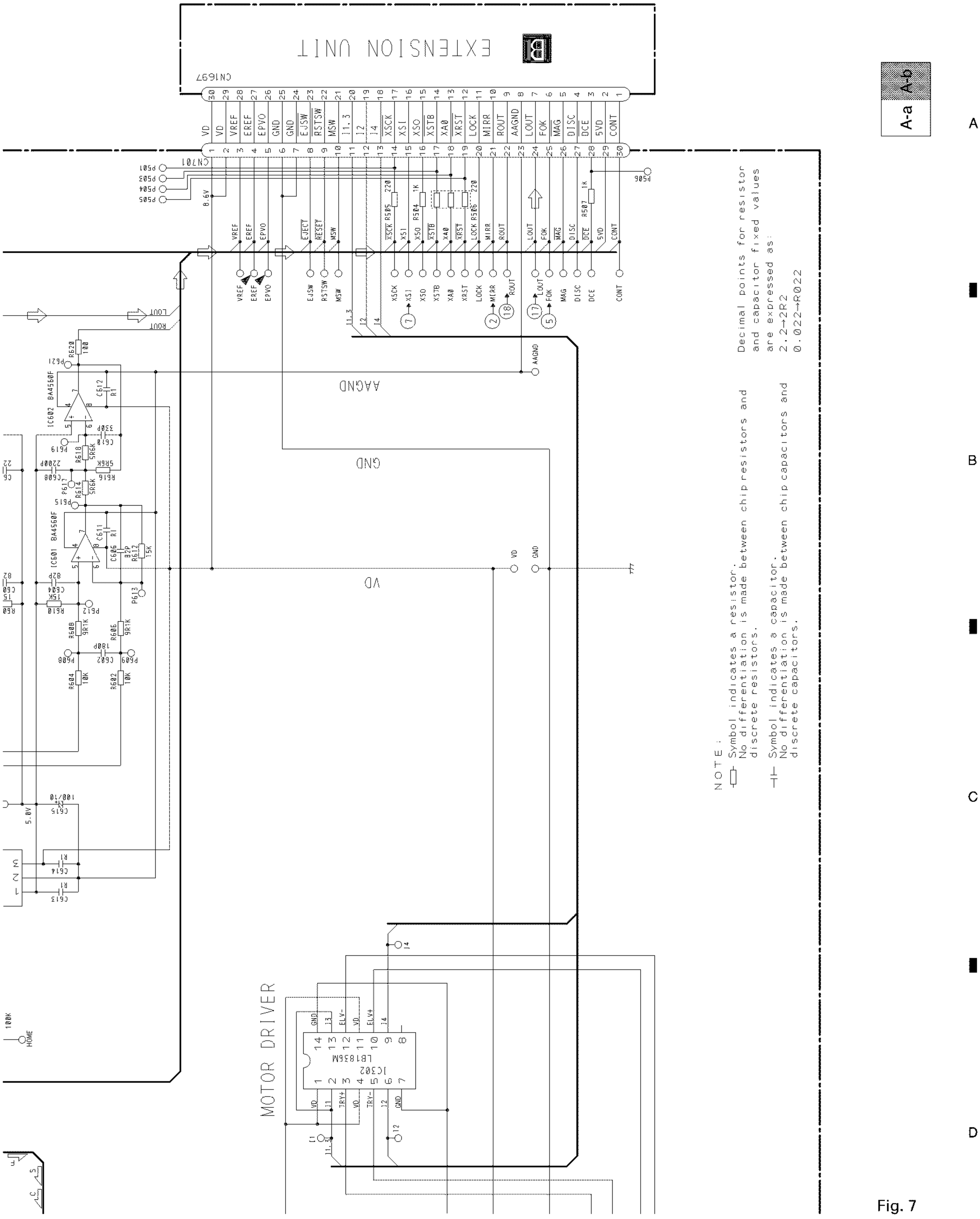

A-b
A-a
A
B
C
D
PGND
VD
GND
ACTUATOR & MOTOR DRIVER
5V REGULATOR
IC301 BA6997FM
C381 100/10
D782 ISR154-400
D781 ISR154-400
C782 R33
IC701 PQ05TZ51
VIN VC VO NC GND
C703 100/6R3
C701 22/6R3 (SP)
GNDA
5.0V
TOM TOP FOM FOP
COM COP SOM SOP
SD MD TEMP
BIAS MUTE Reg SW TEMP MONITOR
Thermal Shut Down
TP801 TP802
EREF VREF EPVD
CCP1338 VRB02 1K(B)
R804 6R2K
R805 5R6K
C802 R1
C801 R01
EJECT S801 CSG1076
S802 CSG1076 RESET
S803 CSN1028 MAG
R805 1K
R807 0R0
R801 S80 (1/10)
C803 R01
MSW MAG DISC HOME
MAGIN
P804 P805 P806 P808
CCW1021 VR801 10K
TRYP TRYM ELVP ELVM
RED ELVP BLACK ELVM
ELV CXB1077 M852
CN801
MSW MAG U/L VLED DISC HOME GND SPDL- SPDL+ CRG- CRG+ TRY+ TRY-
RD GY YL
U/L S854 CSN1012
Q851 PT4800
S853 HOME CSN1012
PHOTO PCB
PCB UNIT
SWITCH PCB
MOTOR PCB
CSN1033 S851 TRP
S852 DSP CSN1033
R851 47K R852 75K
D851 CN504-2
M851 SPINDLE CXA9371
M854 CARRIAGE CXA9131
M853 TRAY CXA9139

Fig. 6

	CDX-P1230S/X1N/EW	CDX-P1230S/X1N/ES CDX-P1230S/X1N/UC
IC501 R203	PD4501B Not used	Not used 0R0



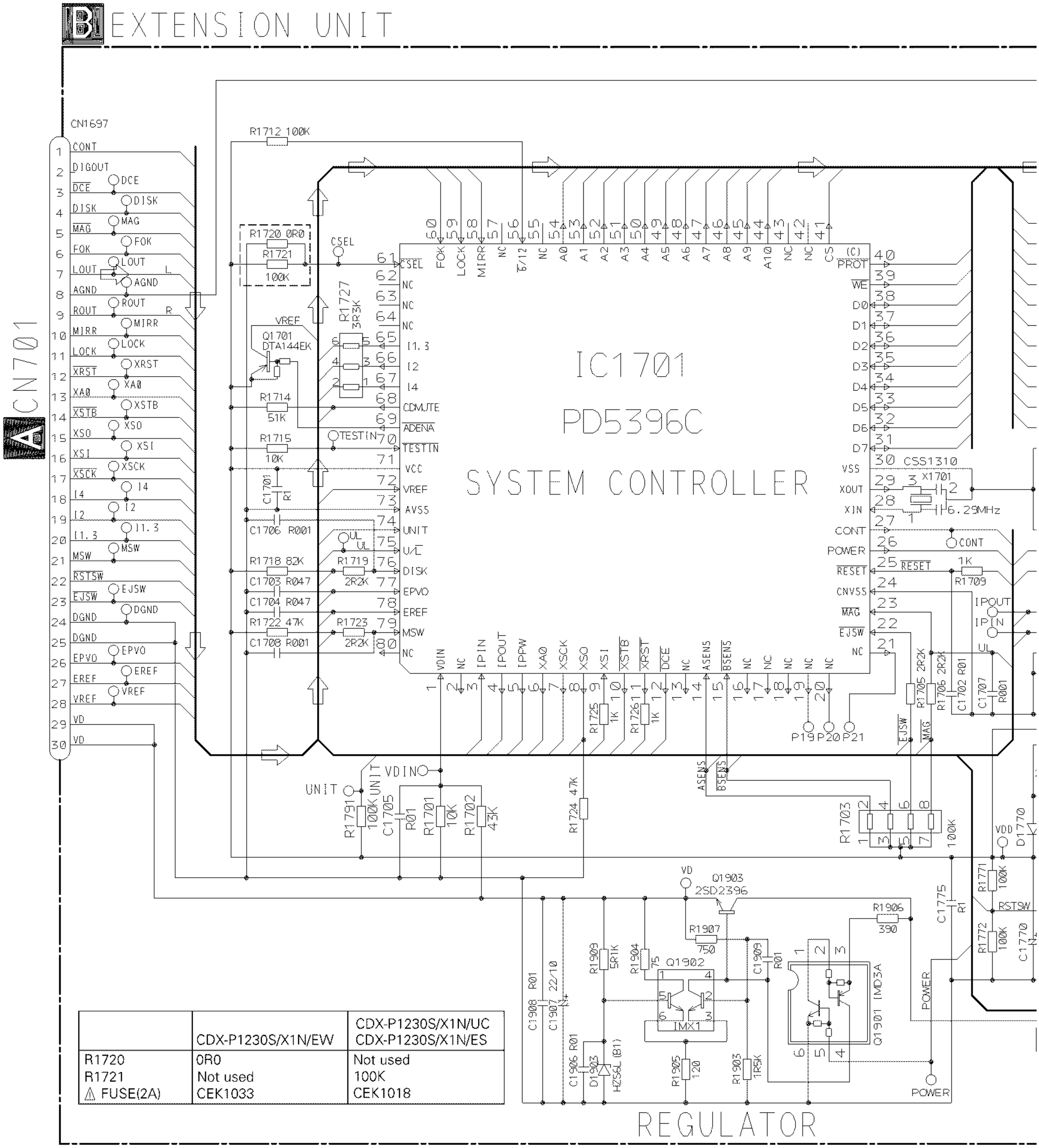


Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

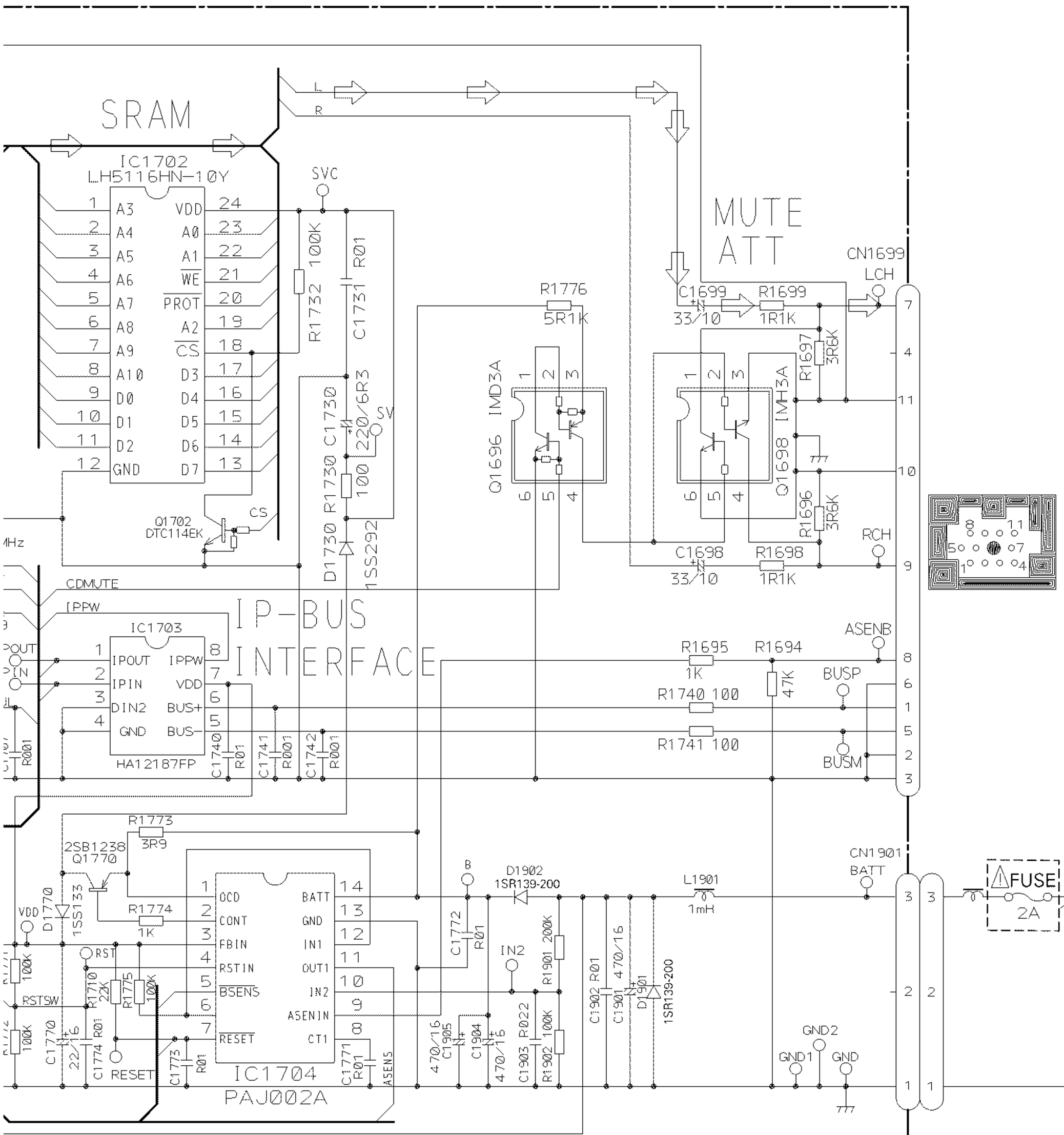
NOTE:
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

Fig. 7

3.2 EXTENSION UNIT



	CDX-P1230S/X1N/EW	CDX-P1230S/X1N/UC CDX-P1230S/X1N/ES
R1720	0R0	Not used
R1721	Not used	100K
⚠ FUSE(2A)	CEK1033	CEK1018



REGULATOR

NOTE :

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Fig. 8

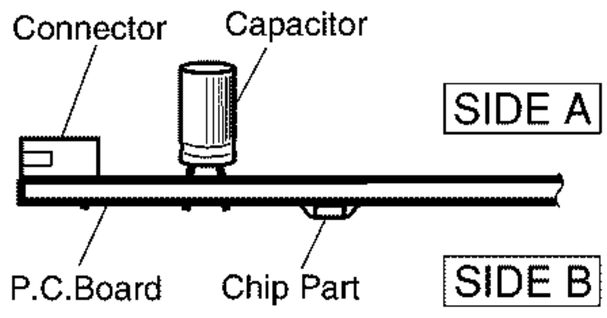
4. PCB CONNECTION DIAGRAM

4.1 EXTENSION UNIT

NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.

2. Viewpoint of PCB diagrams



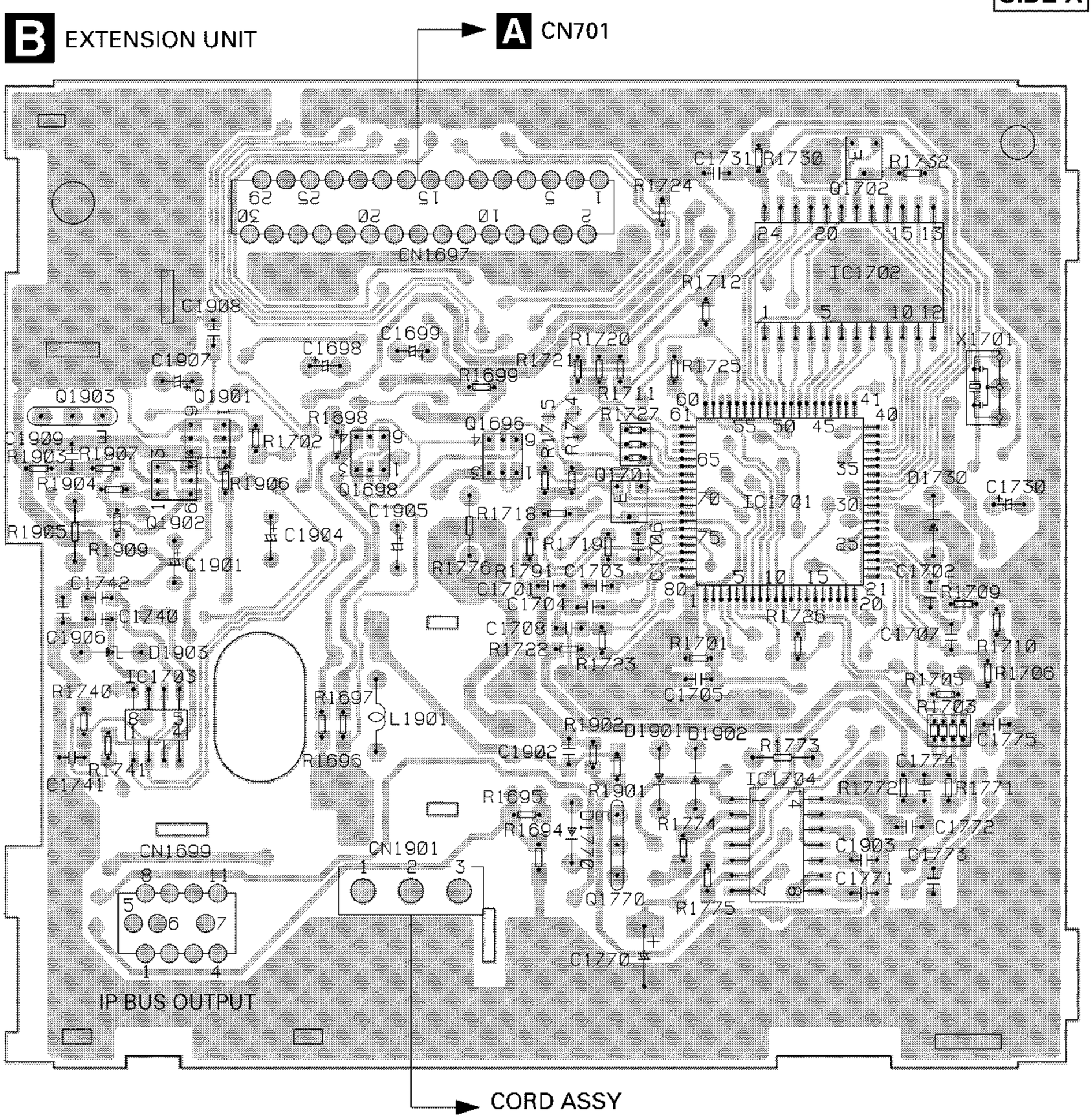


Fig. 9

SIDE B

B EXTENSION UNIT

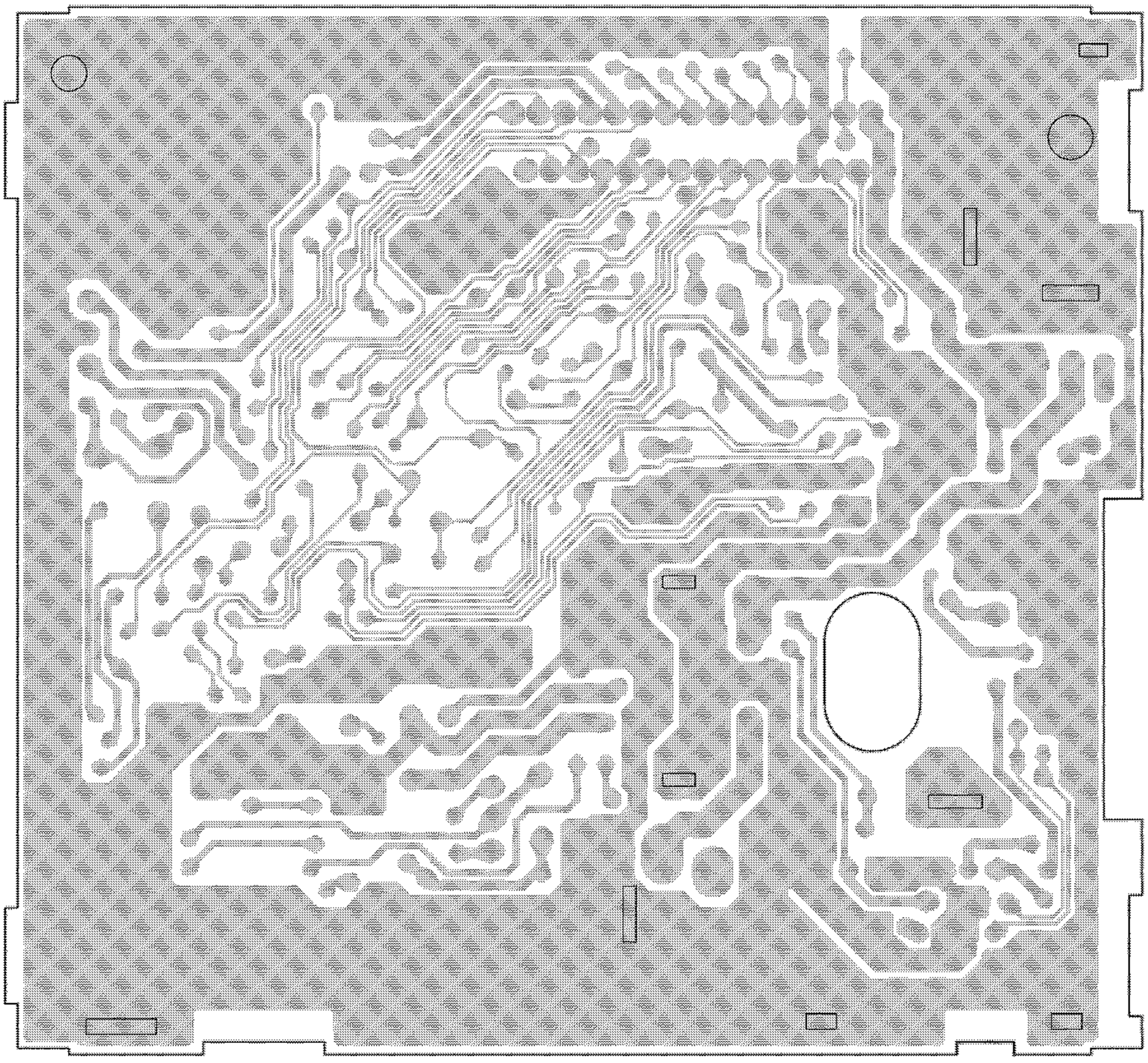


Fig. 10

4.2 CD CORE UNIT

SIDE A

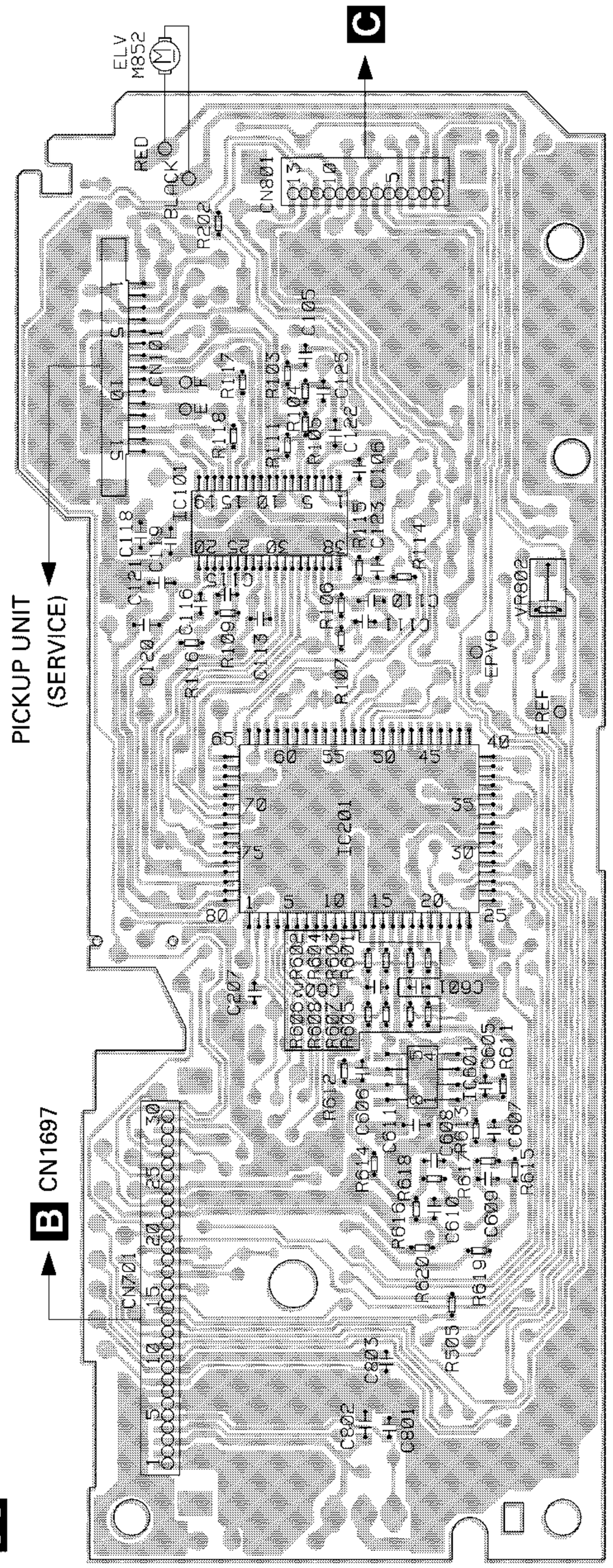


Fig. 11

SIDE B

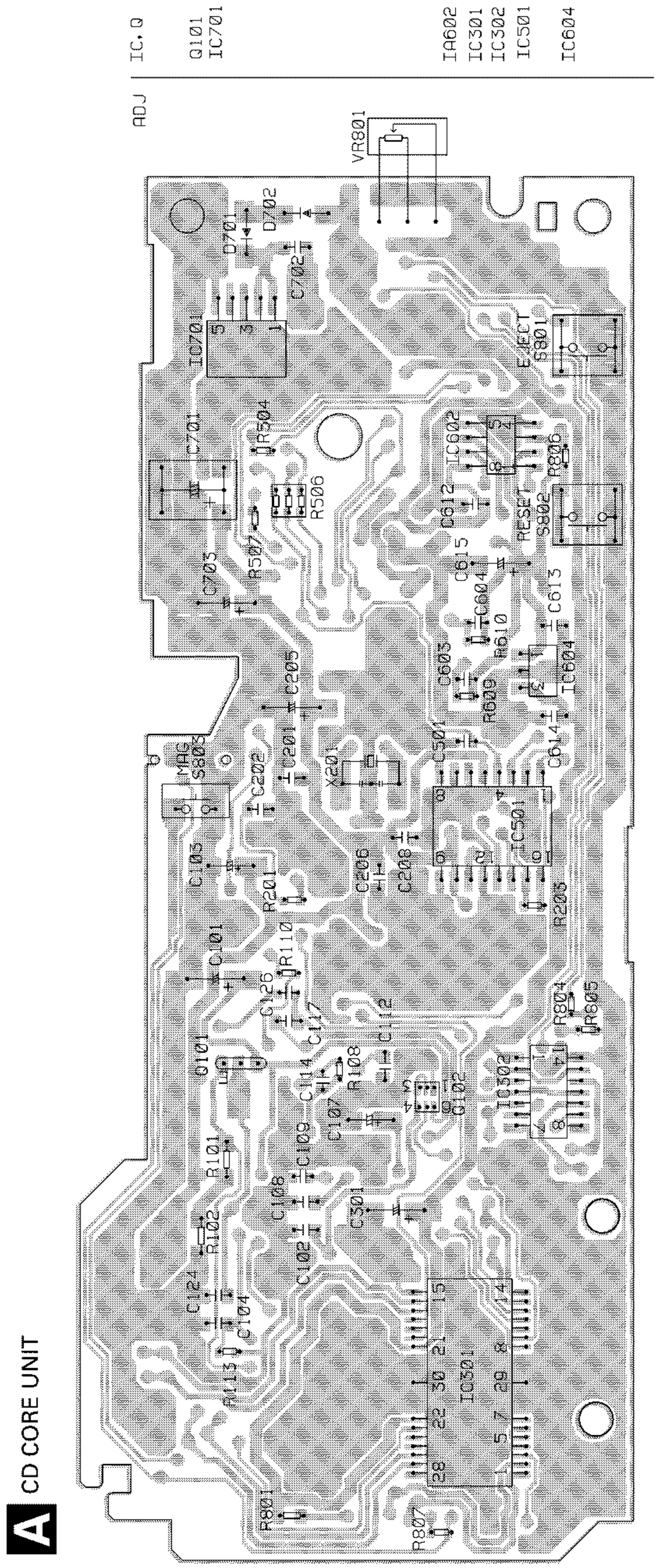

IC,Q
Q101
IC701
IA602
IC301
IC302
IC501
IC604
ADJ
VR801
D701
D702
L702
IC701
C702
C701
R504
R506
C703
R507
C205
C202
IC201
X201
C206
C208
C103
R201
R110
C101
C126
C117
C112
C114
C108
C109
C107
C102
C104
C124
R101
R102
C301
C501
IC501
R809
C610
C604
C613
C615
C612
IC602
RESET
S802
S801
R804
R805
IC302
R807
R801
S803
CD CORE UNIT

Fig. 12

4.3 PHOTO PCB

SIDE A

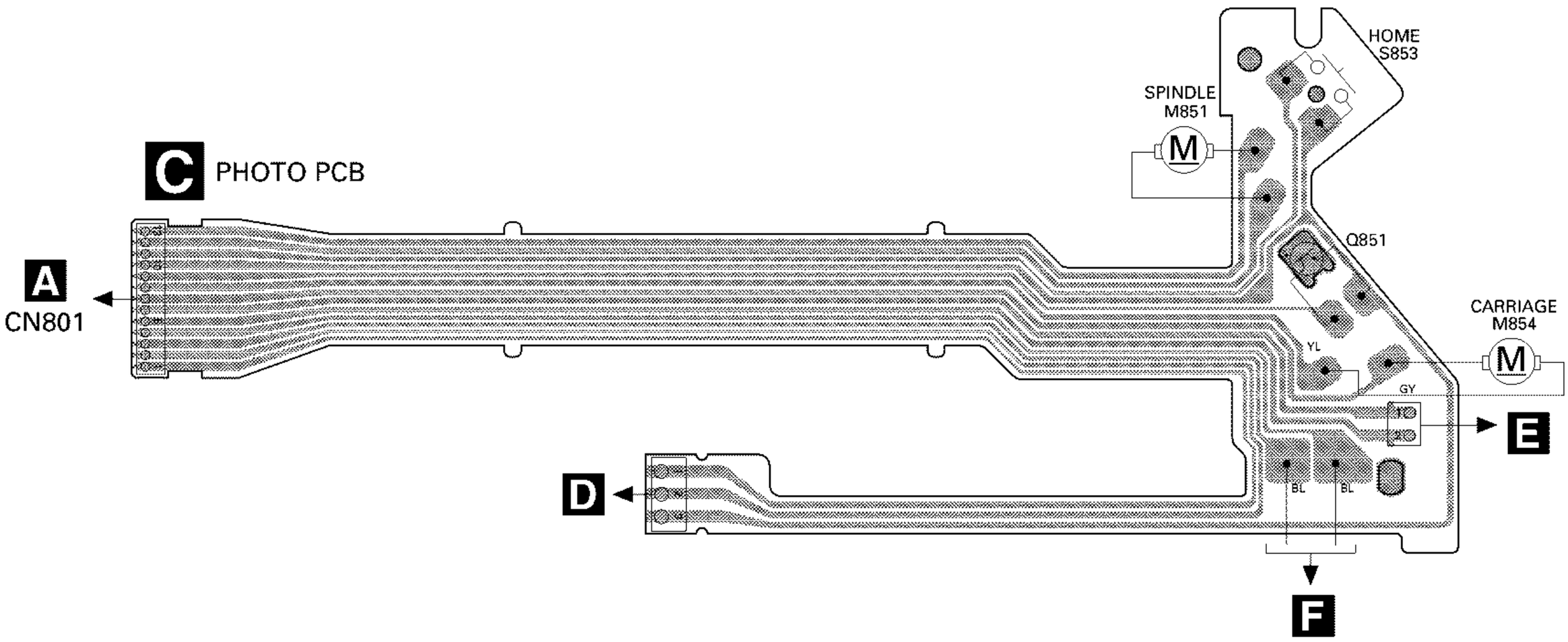


Fig. 13

4.4 PCB UNIT

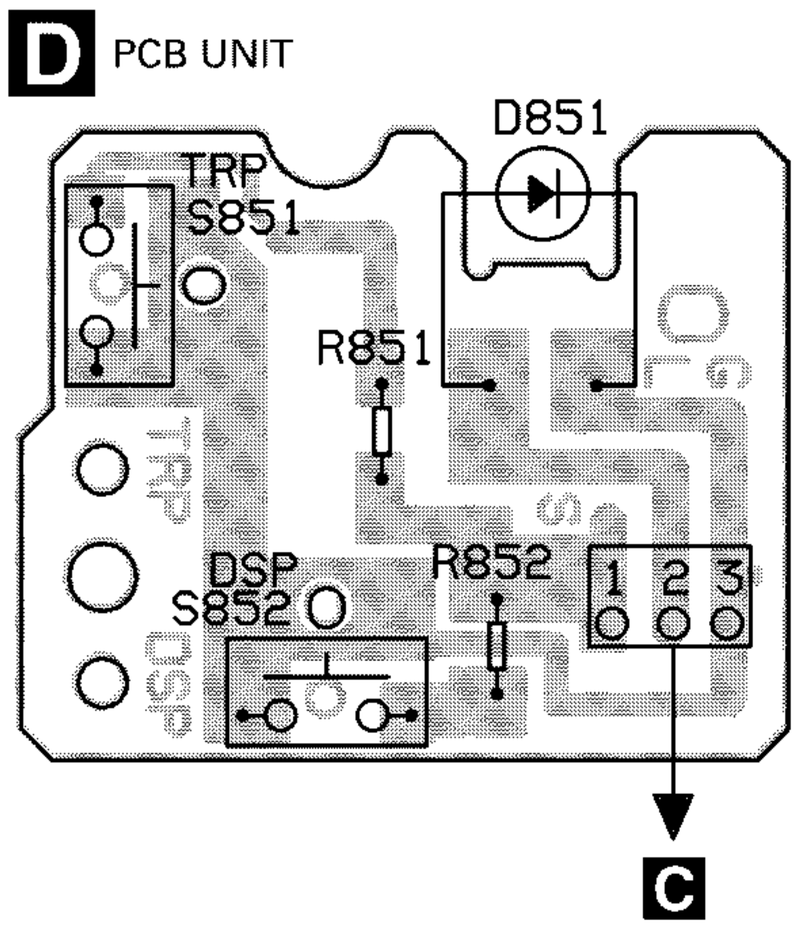


Fig. 14

4.5 MOTOR PCB

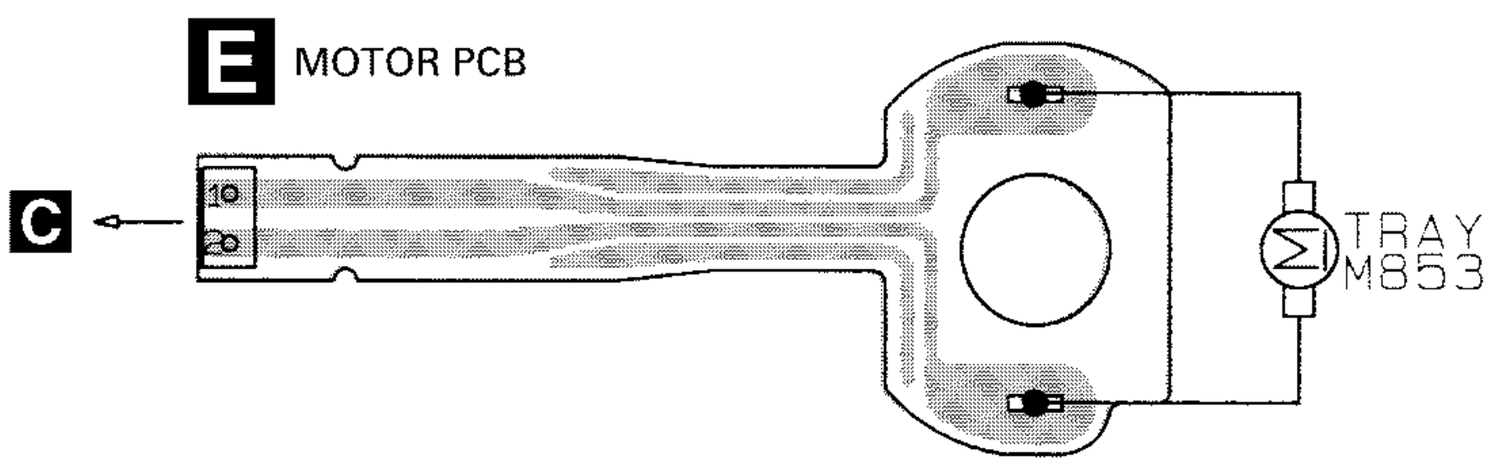


Fig. 15

4.6 SWITCH PCB

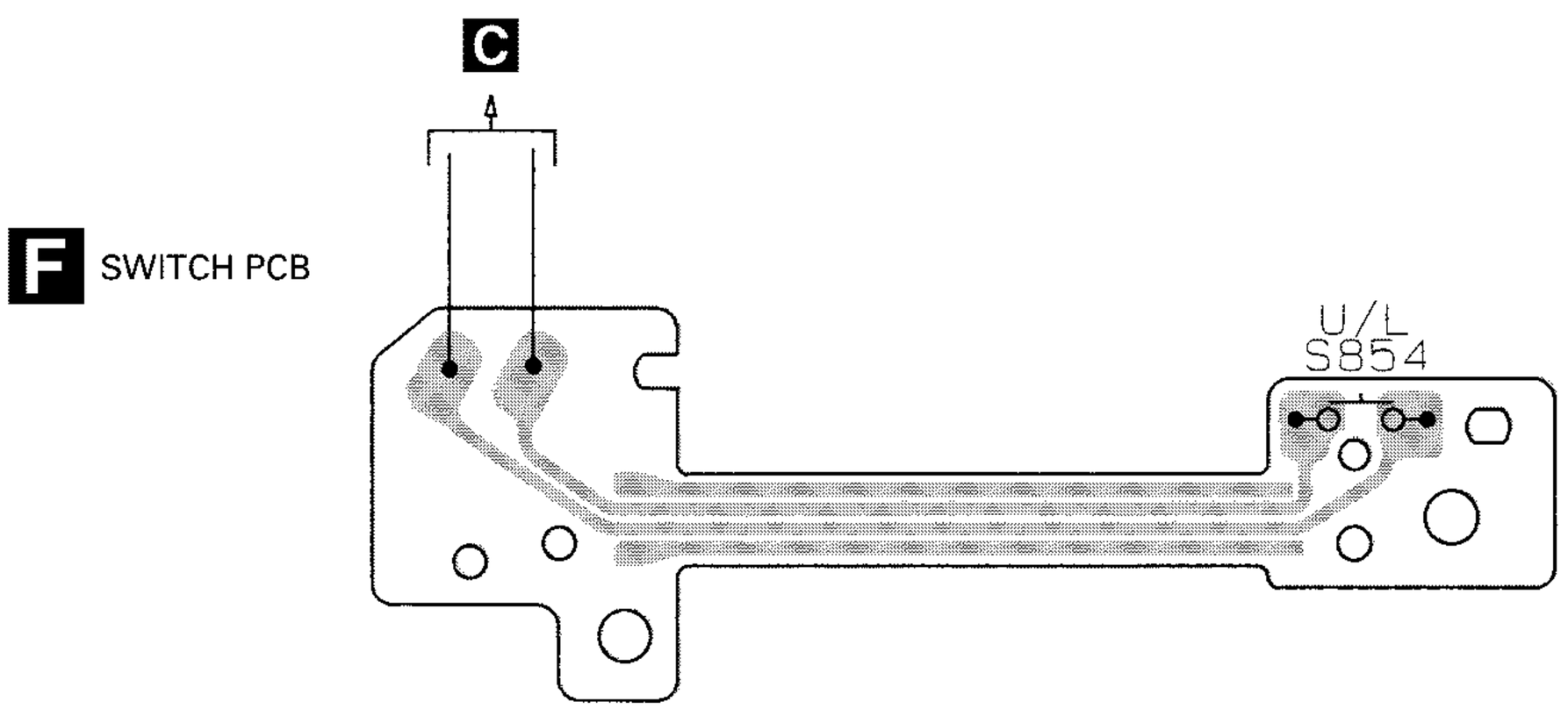


Fig. 16

5. ELECTRICAL PARTS LIST

NOTE:

● Parts whose parts numbers are omitted are subject to being not supplied.

● The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A

Unit Number : CWX2178(CDX-P1230S/X1N/EW)
Unit Number : CWX2177(CDX-P1230S/X1N/UC)
Unit Number : CWX2177(CDX-P1230S/X1N/ES)
Unit Name : CD Core Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	101	IC	UPC2572GS
IC	201	IC	UPD63702AGF
IC	301	IC	BA6997FM
IC	302	IC	LB1836M
IC	501	IC	See Contrast table
IC	601	IC	BA4560F
IC	602	IC	BA4560F
IC	604	IC	TA78L05F
IC	701	IC	PQ05TZ51
Q	101	Transistor	2SD1664
Q	102	Transistor	UMD2N
D	701	Diode	1SR154-400
D	702	Diode	1SR154-400
X	201	Ceramic Resonator 16.93MHz	CSS1363
S	801	Switch(EJECT)	CSG1076
S	802	Switch(RESET)	CSG1076
S	803	Switch(MAG)	CSN1028
VR	802	Semi-fixed 1kΩ(B)	CCP1338

RESISTORS

=====Circuit Symbol and No.		===Part Name	Part No.
R	101		RS1/8S100J
R	102		RS1/8S120J
R	103		RS1/16S102J
R	104		RS1/16S822J
R	105		RS1/16S682J
R	106		RS1/16S183J
R	107		RS1/16S822J
R	108		RS1/16S333J
R	109		RS1/16S683J
R	110		RS1/16S134J
R	111		RS1/16S273J
R	113		RS1/16S222J
R	114		RS1/16S103J
R	115		RS1/16S103J
R	116		RS1/16S102J
R	117		RS1/16S163J
R	118		RS1/16S163J
R	201		RS1/16S104J
R	202		RS1/16S104J
R	203		See Contrast table
R	504		RS1/16S102J
R	505		RS1/16S221J
R	506		RA3C221J
R	507		RS1/16S102J
R	601		RS1/16S103J
R	602		RS1/16S103J
R	603		RS1/16S103J
R	604		RS1/16S103J
R	605		RS1/16S912J
R	606		RS1/16S912J
R	607		RS1/16S912J
R	608		RS1/16S912J
R	609		RS1/16S153J
R	610		RS1/16S153J
R	611		RS1/16S153J
R	612		RS1/16S153J
R	613		RN1/16SK5601D
R	614		RN1/16SK5601D
R	615		RN1/16SK5601D
R	616		RN1/16SK5601D
R	617		RS1/16S562J
R	618		RS1/16S562J
R	619		RS1/16S101J
R	620		RS1/16S101J
R	801		RS1/10S681J
R	804		RS1/16S622J
R	805		RS1/16S562J
R	806		RS1/16S102J
R	807		RS1/16S203J

CAPACITORS

=====Circuit Symbol and No.		===Part Name	Part No.
C	101		CEV101M6R3
C	102		CKSQYB104K16
C	103		CEV470M6R3
C	104		CKSQYB334K16
C	105		CCSRCH330J50
C	106		CKSRYB103K25
C	107		CEV4R7M35
C	108		CKSQYB273K25
C	109		CCSRCH101J50
C	110		CKSQYB104K16
C	111		CKSRYB332K50
C	112		CKSQYB473K25
C	113		CKSRYB103K25
C	114		CKSRYB391K50
C	115		CCSRCH121J50
C	116		CKSRYB682K25
C	117		CKSQYB333K25
C	118		CKSQYB334K16
C	119		CKSQYB334K16
C	120		CKSQYB224K16
C	121		CKSQYB224K16
C	122		CKSQYB104K16
C	123		CKSRYB472K50
C	124		CKSQYB104K16
C	125		CCSRCH6R0D50
C	126		CKSRYB153K25
C	201		CKSQYB334K16
C	202		CKSQYB104K16
C	205		CEV101M6R3
C	206		CKSQYB224K16
C	207		CKSRYB102K50
C	208		CKSQYB224K16
C	301		CEV101M10
C	601		CCSRCH181J50
C	602		CCSRCH181J50

=====Circuit Symbol and No.		===Part Name	Part No.
C	603		CCSRCH820J50
C	604		CCSRCH820J50
C	605		CCSRCH820J50
C	606		CCSRCH820J50
C	607		CKSRYB222K50
C	608		CKSRYB222K50
C	609		CCSRCH331J50
C	610		CCSRCH331J50
C	611		CKSQYB104K16
C	612		CKSQYB104K16
C	613		CKSQYB104K16
C	614		CKSQYB104K16
C	615		CEV101M10
C	701	22µF/6.3V	CCH1233
C	702		CKSQYB334K16
C	703		CEV101M6R3
C	801		CKSRYB103K25
C	802		CKSQYB104K16
C	803		CKSRYB103K25

CONTRAST TABLE of CD CORE UNIT CDX-P1230S/X1N/EW, CDX-P1230S/X1N/UC and CDX-P1230S/X1N/ES are constructed the same except for the following:

Circuit Symbol and Description		P1230S/X1N/EW	P1230S/X1N/ES P1230S/X1N/UC
IC501	IC	PD4501B	Not used
R203		Not used	RS1/16S0R0J

B

Unit Number : CWX2220(CDX-P1230S/X1N/EW)
Unit Number : CWX2207(CDX-P1230S/X1N/UC)
Unit Number : CWX2207(CDX-P1230S/X1N/ES)
Unit Name : Extension Unit

MISCELLANEOUS

IC	1701	IC	PD5396C
IC	1702	IC	LH5116HN-10Y
IC	1703	IC	HA12187FP
IC	1704	IC	PAJ002A
Q	1696	Transistor	IMD3A
Q	1698	Transistor	IMH3A
Q	1701	Transistor	DTA144EK
Q	1702	Transistor	DTC114EK
Q	1770	Transistor	2SB1238
Q	1901	Transistor	IMD3A
Q	1902	Transistor	IMX1
Q	1903	Transistor	2SD2396
D	1730	Diode	1SS292
D	1770	Diode	1SS133
D	1901	Diode	1SR139-200
D	1902	Diode	1SR139-200
D	1903	Diode	HZS6L(B1)
L	1901	Choke Coil 1mH	CTH1047
X	1701	Ceramic Resonator 6.29MHz	CSS1310

RESISTORS

R	1694		RS1/10S473J
R	1695		RS1/10S102J
R	1696		RS1/10S362J
R	1697		RS1/10S362J
R	1698		RS1/10S112J
R	1699		RS1/10S112J
R	1701		RS1/10S103J
R	1702		RS1/10S433J
R	1703		RA4C104J
R	1705		RS1/10S222J
R	1706		RS1/10S222J
R	1709		RS1/10S102J
R	1710		RS1/10S223J
R	1712		RS1/10S104J
R	1714		RS1/10S513J
R	1715		RS1/10S103J
R	1718		RS1/10S823J
R	1719		RS1/10S222J
R	1720		See Contrast table
R	1721		See Contrast table
R	1722		RS1/10S473J
R	1723		RS1/10S222J
R	1724		RS1/10S473J
R	1725		RS1/10S102J
R	1726		RS1/10S102J
R	1727		RA3C332J
R	1730		RS1/10S101J
R	1732		RS1/10S104J
R	1740		RS1/10S101J
R	1741		RS1/10S101J
R	1771		RS1/10S104J
R	1772		RS1/10S104J
R	1773		RD1/4PU3R9J
R	1774		RS1/10S102J
R	1775		RS1/10S104J
R	1776		RD1/4PU512J
R	1791		RS1/10S104J
R	1901		RS1/10S204J
R	1902		RS1/10S104J
R	1903		RS1/10S152J
R	1904		RS1/10S750J
R	1905		RD1/4PU121J
R	1906		RS1/10S391J
R	1907		RS1/10S751J
R	1909		RS1/10S512J

CAPACITORS

C	1698		CEJA330M10
C	1699		CEJA330M10
C	1701		CKSQYB104K16
C	1702		CKSQYB103K25
C	1703		CKSQYB473K16
C	1704		CKSQYB473K16
C	1705		CKSQYB103K25
C	1706		CKSQYB102K50
C	1707		CKSQYB102K50
C	1708		CKSQYB102K50
C	1730		CEJA221M6R3
C	1731		CKSQYB103K25
C	1740		CKSQYB103K25
C	1741		CKSQYB102K50
C	1742		CKSQYB102K50
C	1770		CSZST220M16
C	1771		CKSQYB103K25
C	1772		CKSQYB103K25
C	1773		CKSQYB103K25
C	1774		CKSQYB103K25
C	1775		CKSQYB104K16
C	1901	470µF/16V	CCH1183
C	1902		CKSQYB103K50
C	1903		CKSQYB223K25
C	1904	470µF/16V	CCH1183
C	1905	470µF/16V	CCH1183
C	1906		CKSQYB103K25
C	1907		CEJA220M10
C	1908		CKSQYB103K25
C	1909		CKSQYB103K25

=====Circuit Symbol and No.===Part Name Part No.

CONTRAST TABLE of EXTENSION UNIT CDX-P1230S/X1N/EW, CDX-P1230S/X1N/UC and CDX-P1230S/X1N/ES are constructed the same except for the following:

Circuit Symbol and Description	P1230S/X1N/EW	P1230S/X1N/ES P1230S/X1N/UC
R1720	RS1/10S0R0J	Not used
R1721	Not used	RS1/10S104J

C Unit Number :
Unit Name : Photo PCB

Q	851	Photo-transistor	PT4800
S	853	Switch(HOME)	CSN1012

D Unit Number :
Unit Name : PCB Unit

S	851	Switch(TRP)	CSN1033
S	852	Switch(DSP)	CSN1033
R	851		RS1/8S473J
R	852		RS1/8S753J

E Unit Number :
Unit Name : Motor PCB

M	853	Motor Unit(TRAY)	CXA9139

F Unit Number :
Unit Name : Switch PCB

S	854	Switch(U/L)	CSN1012

Miscellaneous Parts List

D	851	LED	CN504-2
M	851	Motor Unit(SPINDLE)	CXA9371
M	852	Motor Unit(ELV)	CXB1077
M	854	Motor Unit(CARRIAGE)	CXA9131
VR	801	Volume 10kΩ	CCW1021
		Pickup Unit(Service)	CXX1235

6. ADJUSTMENT

6.1 CD ADJUSTMENT

1)Precautions

· This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
If REFO and GND are connected to each other by mistake during adjustments,not only will it be impossible to measure the potential correctly,but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this,take special note of the following.

· Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
Since the frame of the measuring instrument is usually at the same potential as the negative probe,change the frame of the measuring instrument to floating status.
If by accident REFO comes in contact with GND,immediately switch the regulator or power OFF.

· Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

· Before proceeding to further adjustments and measurements after switching regulator ON,let the player run for about one minute to allow the circuits to stabilize.

· Since the protective systems in the unit's software are rendered inoperative in test mode,be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

· This unit is adjusted in a combination with the CD control unit (KEH-P7000, etc.). Each regulator key should be operated at the unit.
With the KEH-P7000 taken up for reference, a description will be given below concerning how to enter into the test mode, including key operations. The key in the adjustment text is also one of the KEH-P7000 keys.

· How to enter into the test mode
Switch ACC,back-up ON while pressing the 4 and 6 keys together.

· Resetting the test mode
Switch ACC,back-up Off.

· Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently,if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment,the following malfunctions may occur.
*During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
*The unit will not load a disc.
When the unit malfunctions this way,either re-position the light source,move the unit or cover the photo transistor.

· When loading and unloading discs during adjustment procedures,always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.

· Turn power off when pressing the button **FF** or the button **REV** key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

· SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released.Tracking is closed the moment C-MOVE is released.

· JUMP MODE resets to SINGLE as soon as power is switched off.

6.2 CHECKING THE GRATING

● Checking the Grating After Changing the Pickup Unit

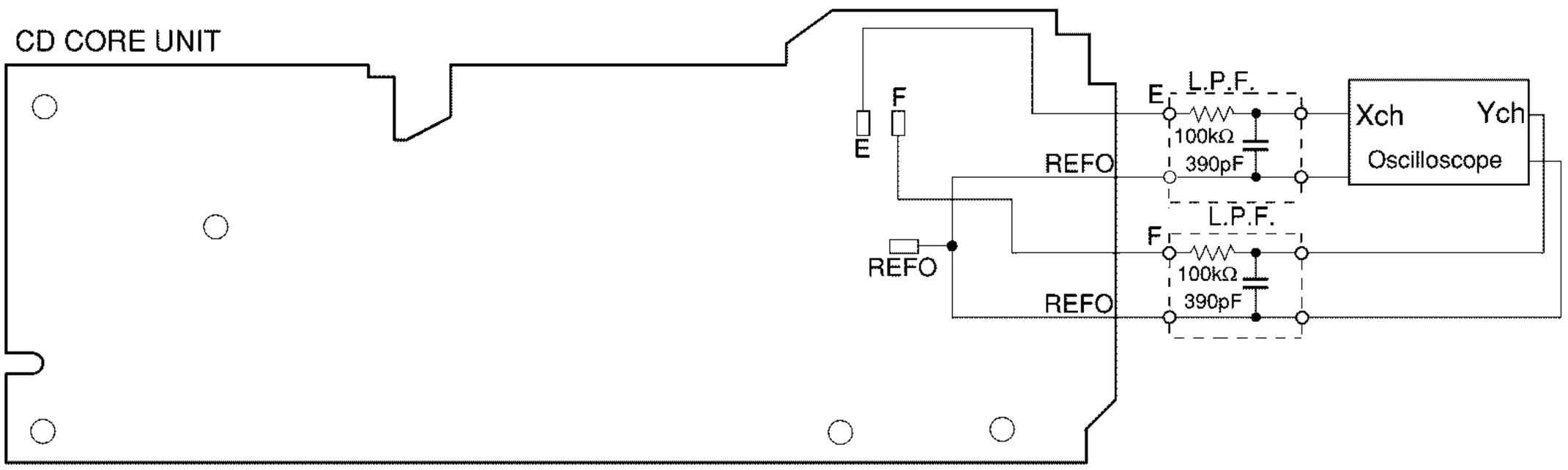
·**Note :**
Unlike previous CD mechanism modules the grating angle of the pickup unit cannot be adjusted after the pickup unit is changed. The pickup unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted pickup unit for the CD mechanism module. Changing the pickup unit is thus best considered as a last resort. However, if the pickup unit must be changed, the grating should be checked using the procedure below.

·**Purpose :**
To check that the grating is within an acceptable range.

·**Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

·**Method :**

·Measuring Equipment	·Oscilloscope, Two L.P.F.
·Measuring Points	·E, F, REFOUT
·Disc	·ABEX TCD-784
·Mode	·TEST MODE



·**Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the **FF** and **REV** buttons, move the pickup unit to the innermost track.
3. Press key **9** to close focus, the display should read "91". Press key **8** to implement the tracking balance adjustment the display should now read "81". Press key **9** 4 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the pickup unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

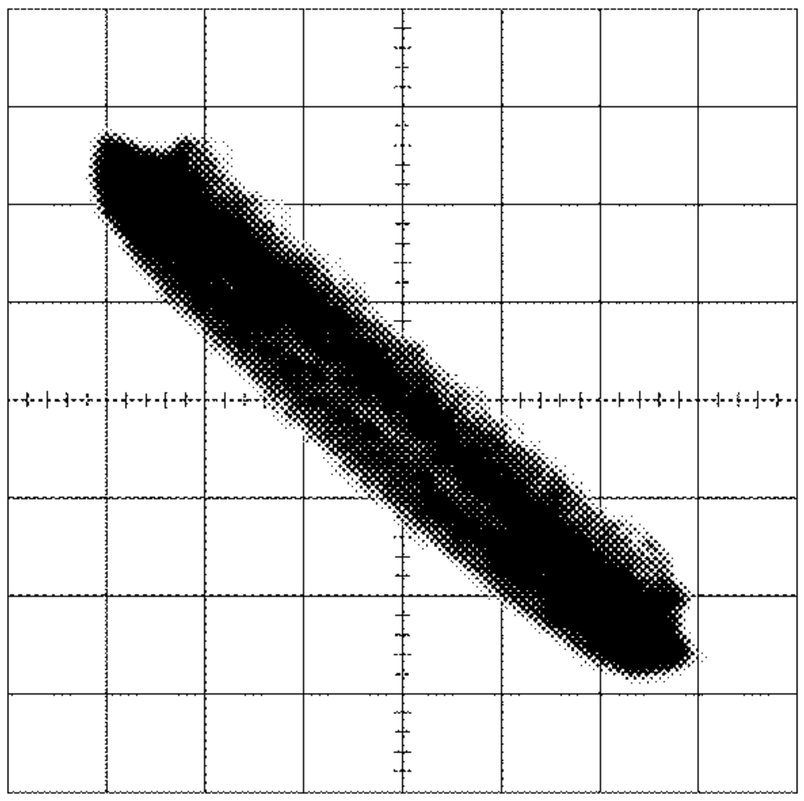
·**Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

·**Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

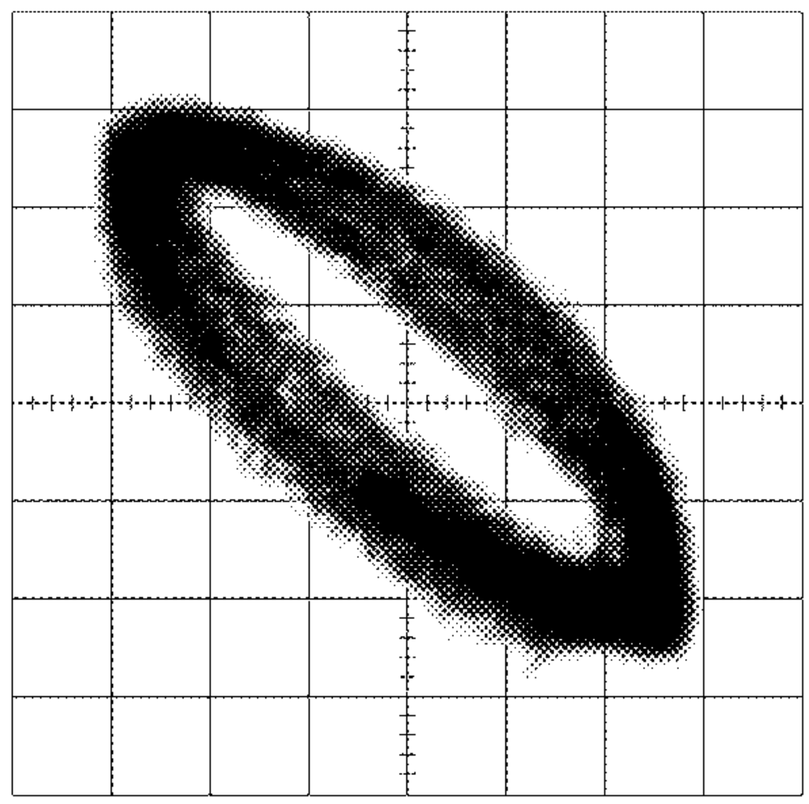
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

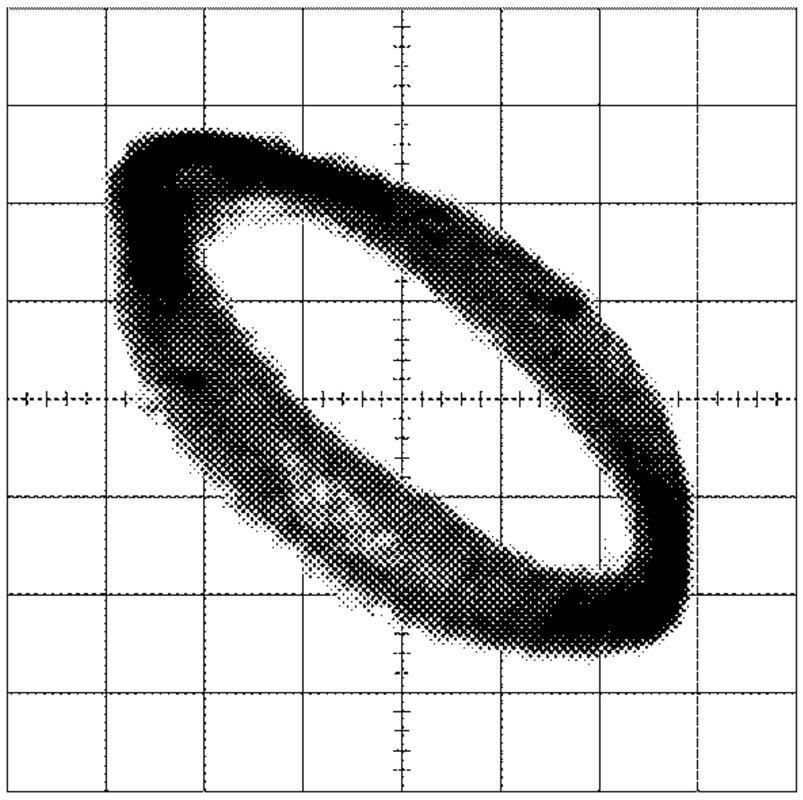
0°



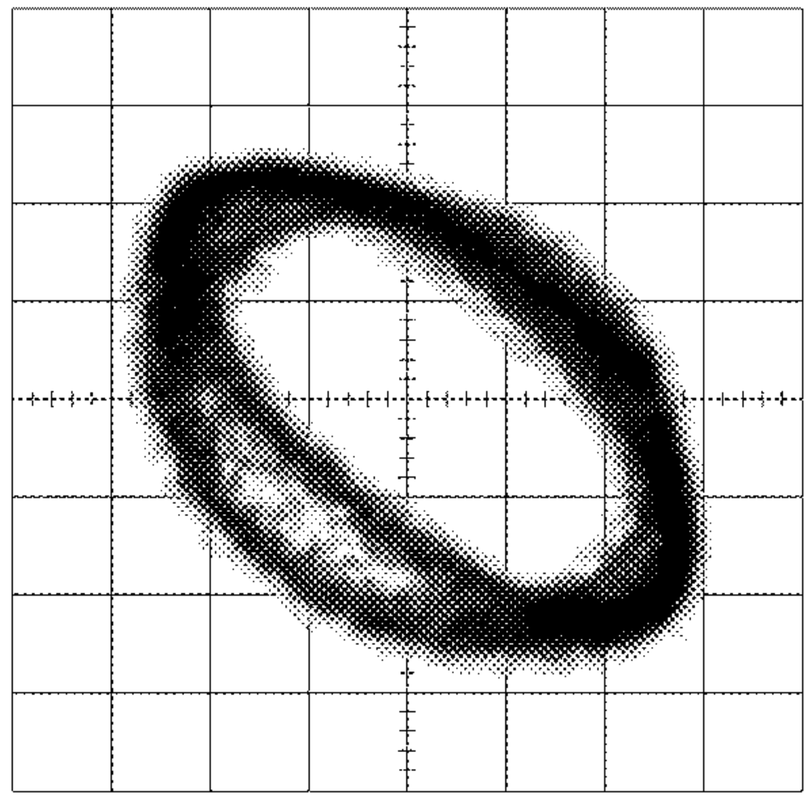
30°



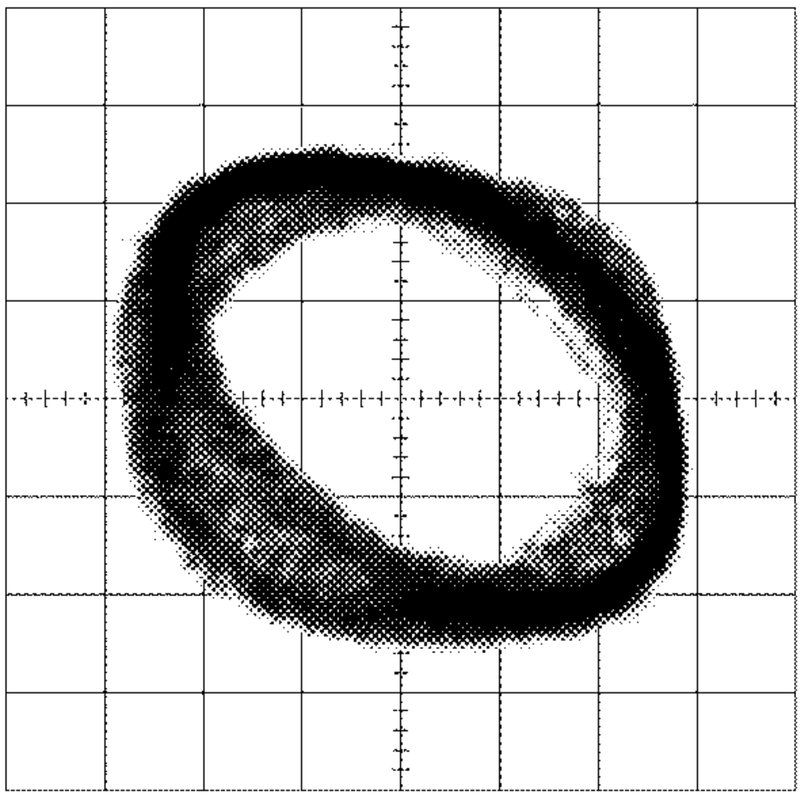
45°



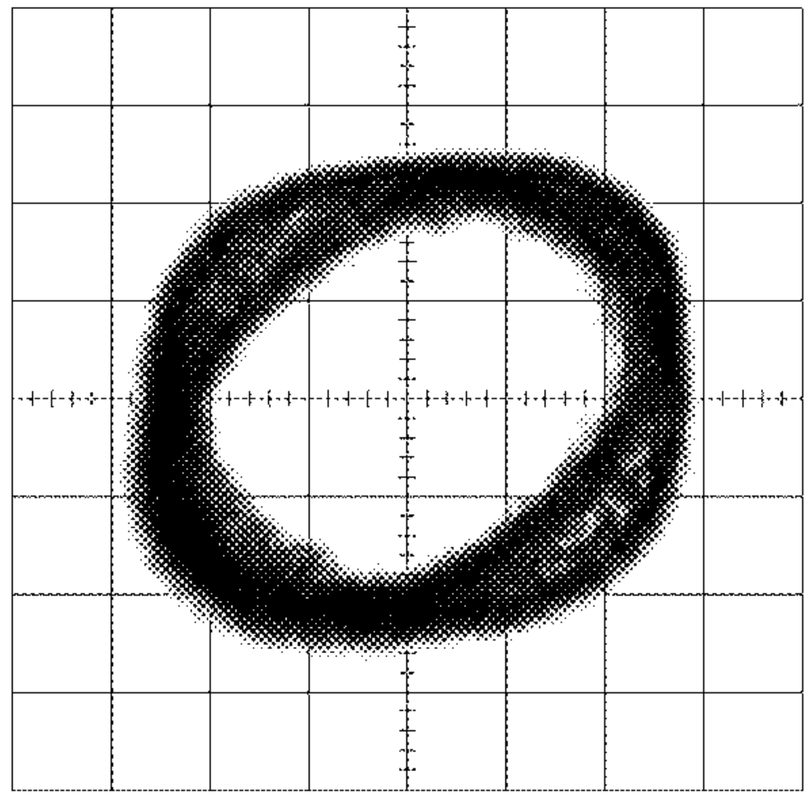
60°



75°



90°



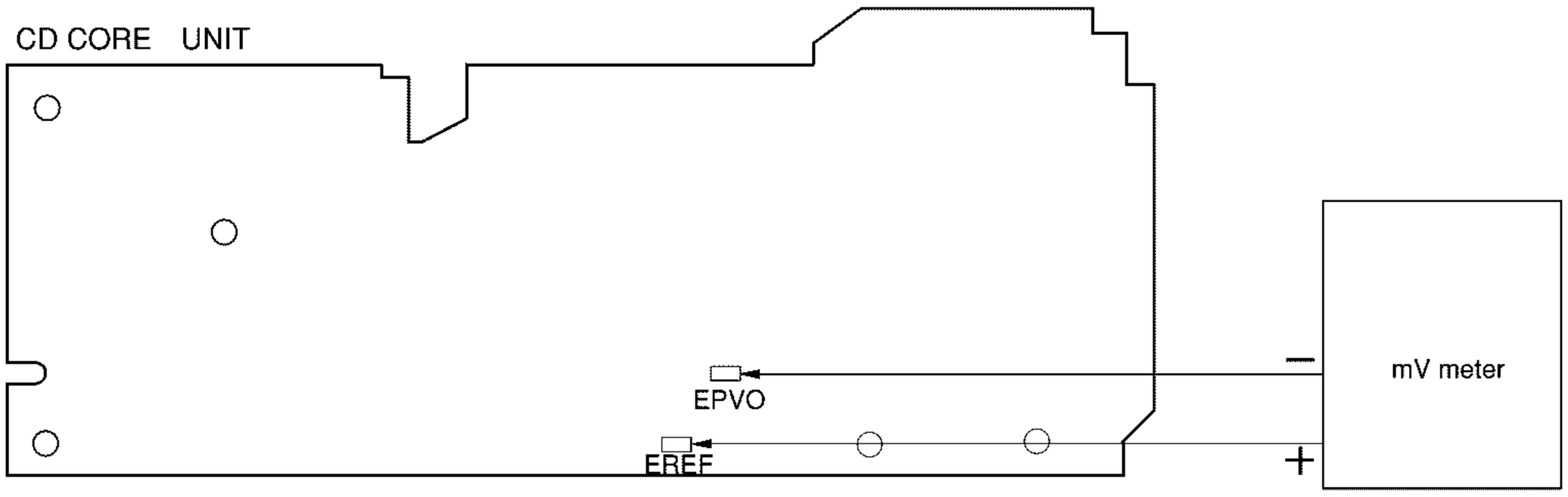
6.3 ADJUSTMENT OF ELEVATION WHEN THE CD CORE UNIT HAS BEEN REMOVED FOR MAINTENANCE

● Adjustment When Error Code 60 is Displayed Because of Malfunctioning Elevation

·**Note :**
Unlike the conventional mechanisms, the new mechanism detects the height of the stage using slide-variable resistance.
To absorb dislocation of the stage height caused by differences in the mechanism and the CD core unit, adjustment must be made for each CD-mechanism module using a variable resistor.
Normally, readjustment is not needed, as this has been adjusted at the factory. However, adjustment of elevation is required according to the procedure explained below if an elevation error has occurred or if the CD core unit has been removed.

·**Purpose :**
To adjust and confirm whether or not elevation operates correctly.

·**Adjustment Method :**
·Measuring Equlpment: Millivoltmeter
·Measuring Points : EREF, EPVO
·Setting : Without a magazine in Test mode
With the mechanism placed upside-down (Place the CD mechanism module so that the CD core unit is above.)



·**Confirmation Procedure**

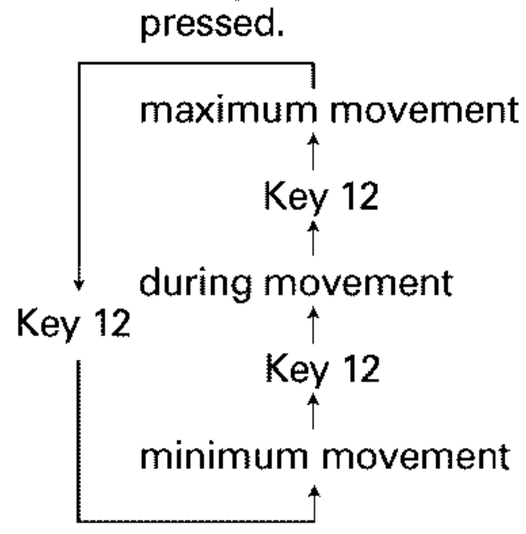
1. Enter Test mode, then select Multi-CD player.
2. Press key **7** to enter Mechanism Test mode.
3. Press key **12** twice to specify the amount of movement.

Examples of display

TRACK	FUNCTION
	' "

TRACK	FUNCTION
72	00' 00"

The amount of movement changes each time key **12** is pressed.



TRACK	FUNCTION
72	00' 02"

TRACK	FUNCTION
72	00' 01"

TRACK	FUNCTION
72	00' 00"

Examples of display

4. Press key **9** to set ELV/TRAY mode to TRAY.

TRACK	FUNCTION
72	01' 02"

5. Press key **FF** to release the clamp and return the tray to the magazine.

Release the clamp

6. Press key **9** to enter Elevation Move mode.

TRACK	FUNCTION
72	00' 02"

7. Use key **FF/REV** to operate elevation and set if to the lower stage (seventh to twelfth discs) so that elevation is set to the "R" mark (Fig. 17).

8. Make the adjustment.
   Use VR802 to adjust the difference in potential between EREF and EPVO to 0 ±20 mV.

9. When adjustment is completed, press key **BAND** to exit Mechanism Test mode.

TRACK	FUNCTION
72	00' 02"

10. Confirm operation of the mechanism.
    Place the mechanism horizontally (CD core unit below). Take care not to short-circuit the PCB.

TRACK	FUNCTION
	' "

11. Confirm the height of the stage. Use the 10 key to select Disc No.10.

    Check if the stopper bend of the clamp lever is engaged in the groove of the frame stopper (Fig. 18-20).

TRACK	FUNCTION
04	00' 00"

·**Note :**
The stopper bend will be pressed downward into the groove for final clamping. Confirm the engagement position of the stopper bend.

·If the stopper bend is engaged in the center and pressed downward, adjustment is completed. Go to step 15.

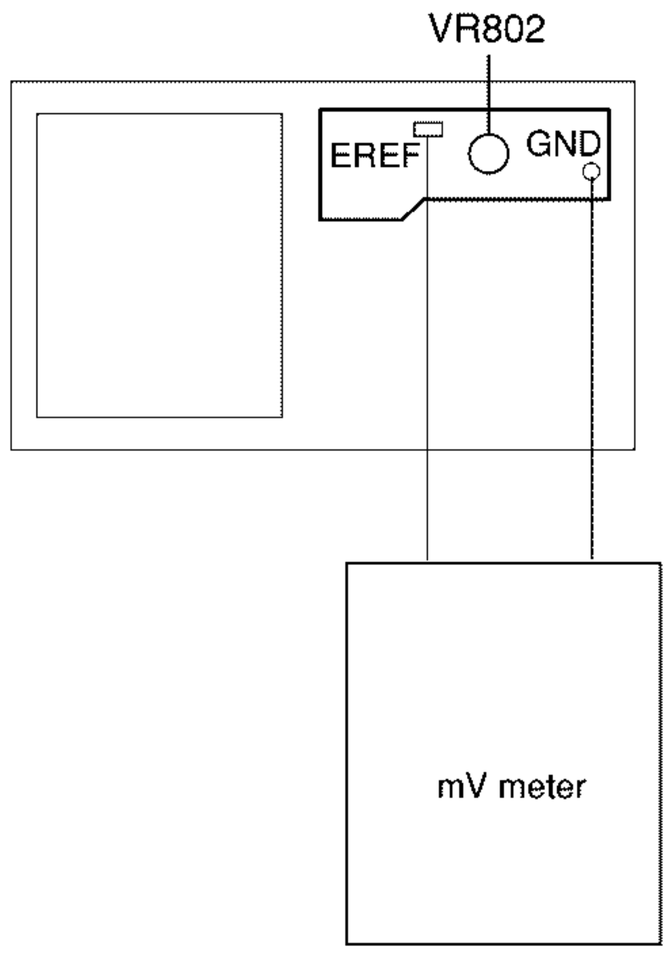
·If the stopper bend is dislocated, check the amount of dislocation by following steps 12 to 14.

12. To see the amount of dislocation, place the mechanism upside-down. If the stopper bend has been dislocated in the direction of the seventh CD, turn VR802 to the left(Fig. 18).

    To lower the stage toward the twelfth step by 0.1 mm, reduce the voltage of EREF (adjusted in step 8) by 20 mV.

    If the stopper bend has been dislocated in the direction of the twelfth CD, turn VR802 to the right(Fig. 20).

    To raise the stage toward the seventh step by 0.1 mm, increase the voltage of EREF (adjusted in step 8) by 20 mV.



13. Place the mechanism horizontal. Go back to step 11 to reconfirm the stage height.

14. When adjustment of the stage height is completed, proceed as follows:

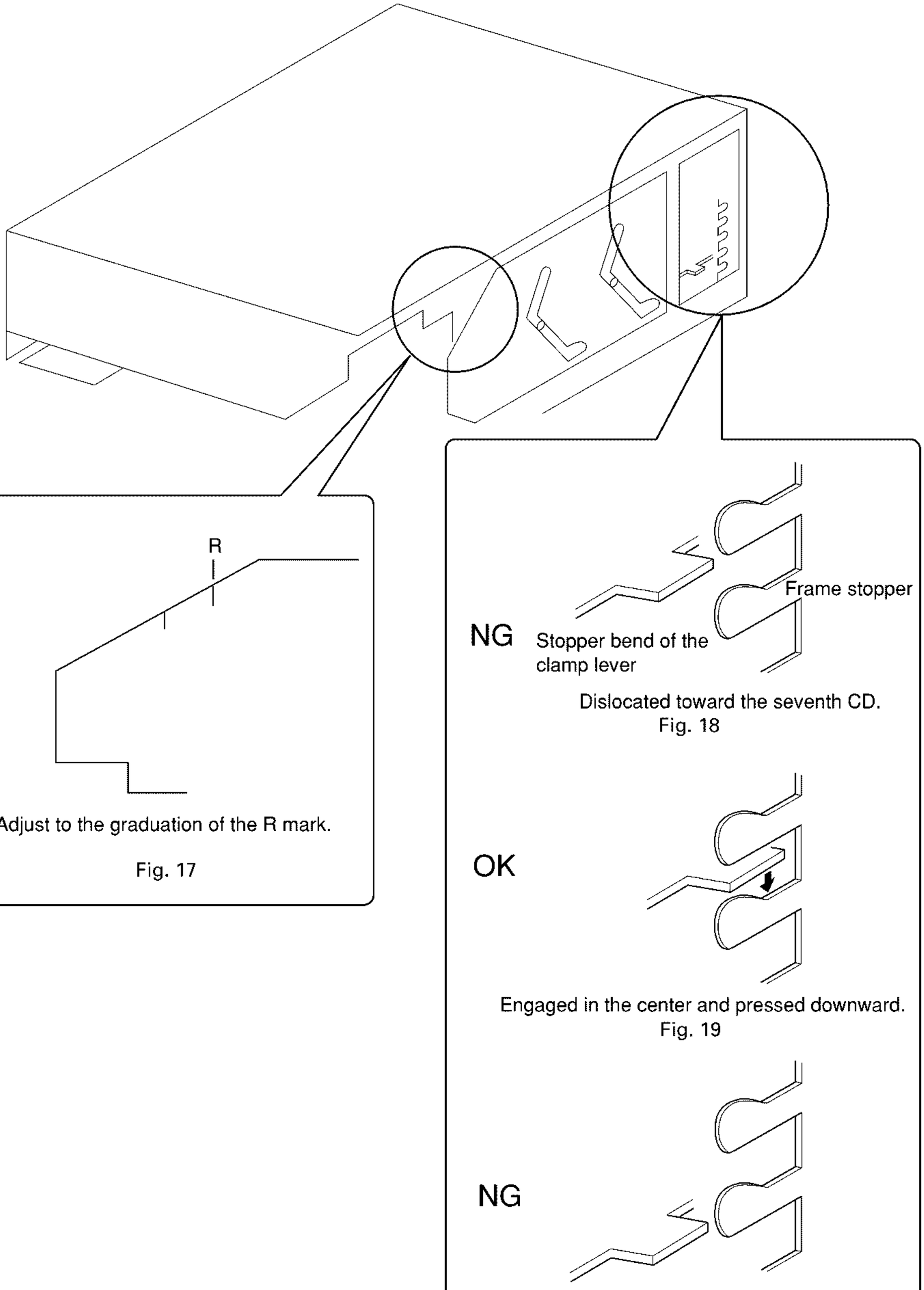
15. Press the **EJECT** switch.

16. Once operation of the mechanism has stopped, turn the power OFF.

17. Wait more than one minute after the power is turned off, then turn the power ON and insert a magazine.

18. Check if the mechanism operates correctly with the first, sixth, seventh and twelfth CDs.

19. If the mechanism operates properly, adjustment is completed. If the mechanism operates improperly, make the adjustment again.


R
Adjust to the graduation of the R mark.
Fig. 17
NG
Stopper bend of the clamp lever
Frame stopper
Dislocated toward the seventh CD.
Fig. 18
OK
Engaged in the center and pressed downward.
Fig. 19
NG
Dislocated toward the twelfth CD.
Fig. 20

7. GENERAL INFORMATION

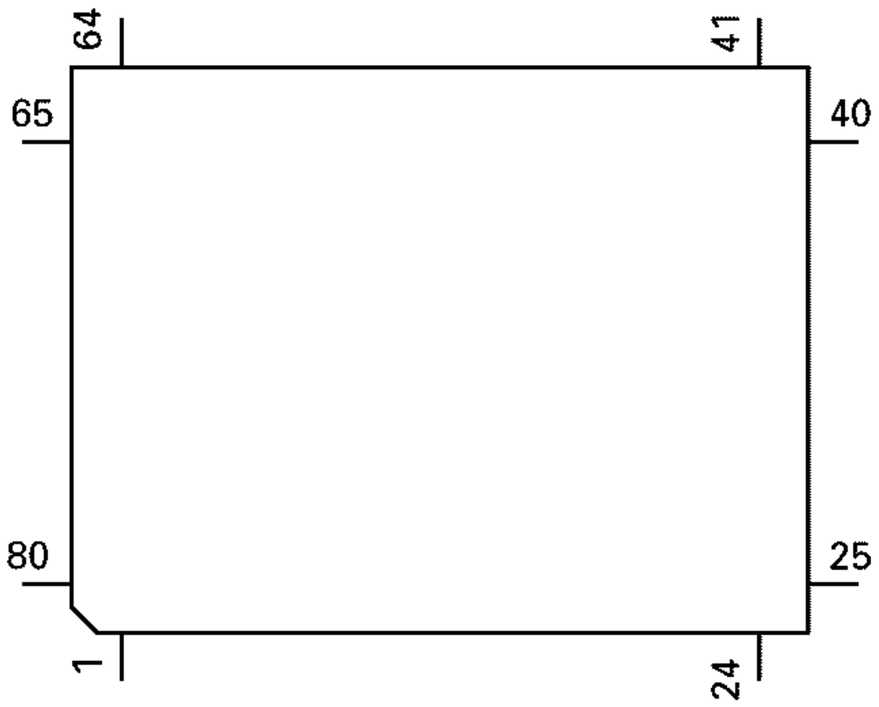
7.1 IC

● **Pin Functions (UPD63702AGF)**

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	$\overline{RST}$	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": $\overline{STB}$ active and set to address register AO="H": $\overline{STB}$ active and set to parameter
4	$\overline{STB}$	I	Signal to latch serial data within the LSI
5	$\overline{SCK}$	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	$\overline{XTAL}$	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	$\overline{VCO}$	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2,TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1,C1D2	O	Output pin for indicating the C1 error correction results

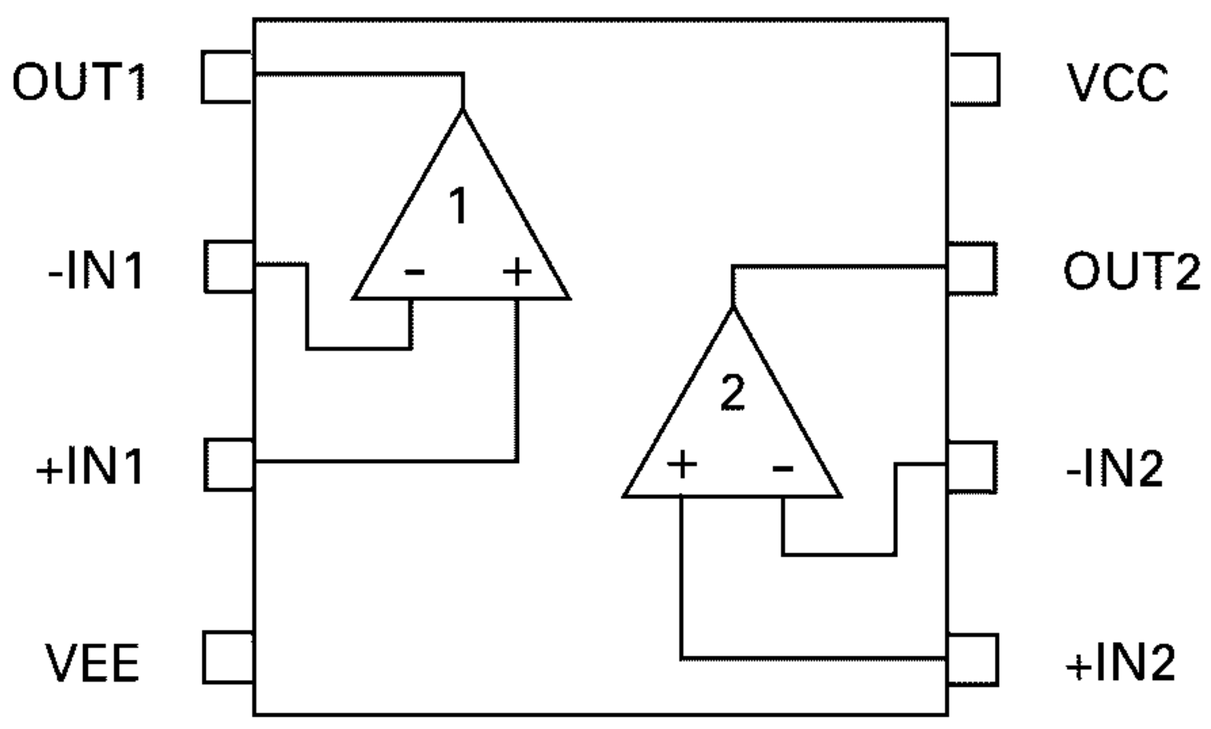
Pin No.	Pin Name	I/O	Function and Operation
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times
58	SBSO	O	Output pin for the subcode data
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74,75	VR2,1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit

*UPD63702AGF

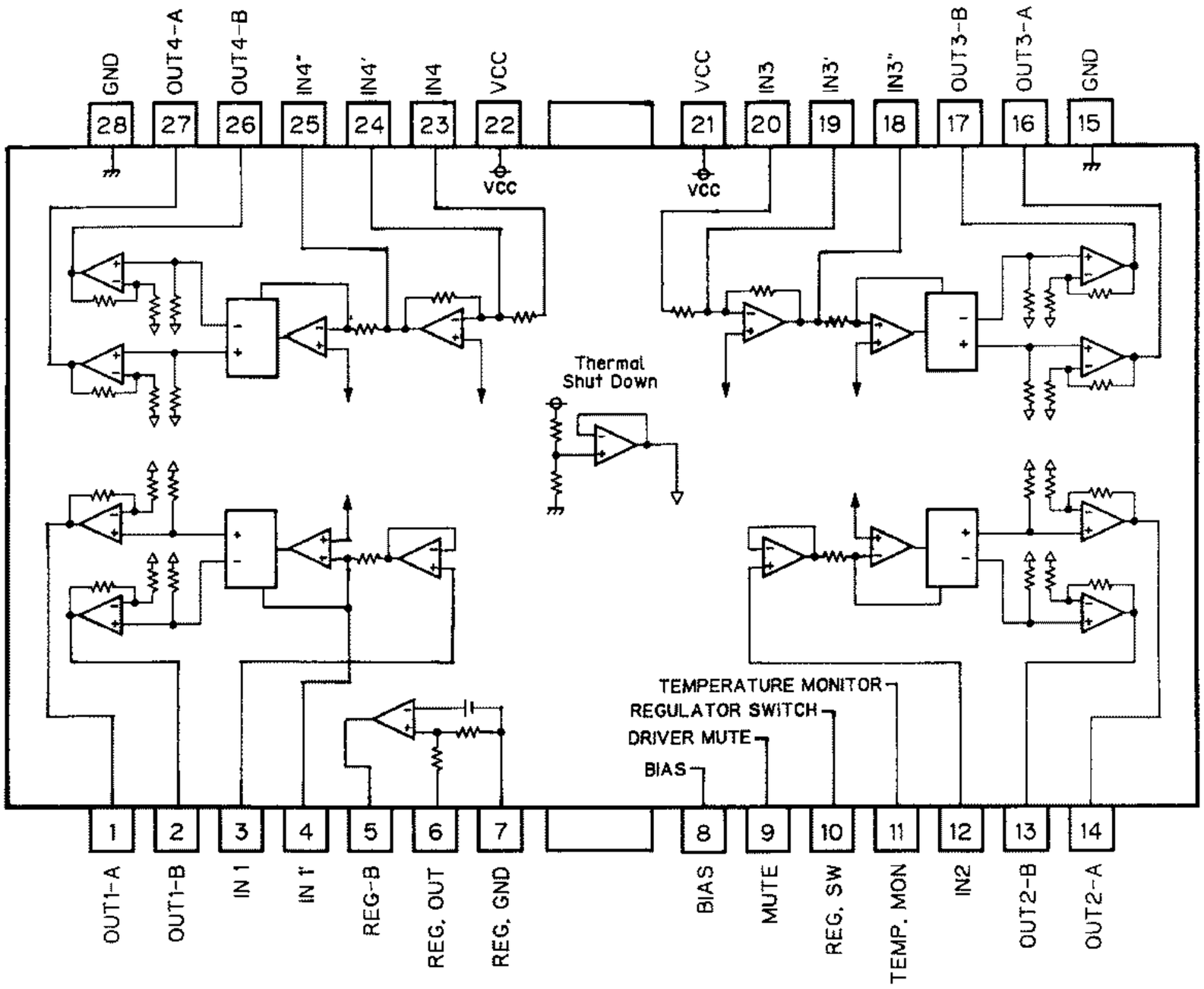


IC's marked by are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

BA4560F



BA6997FM

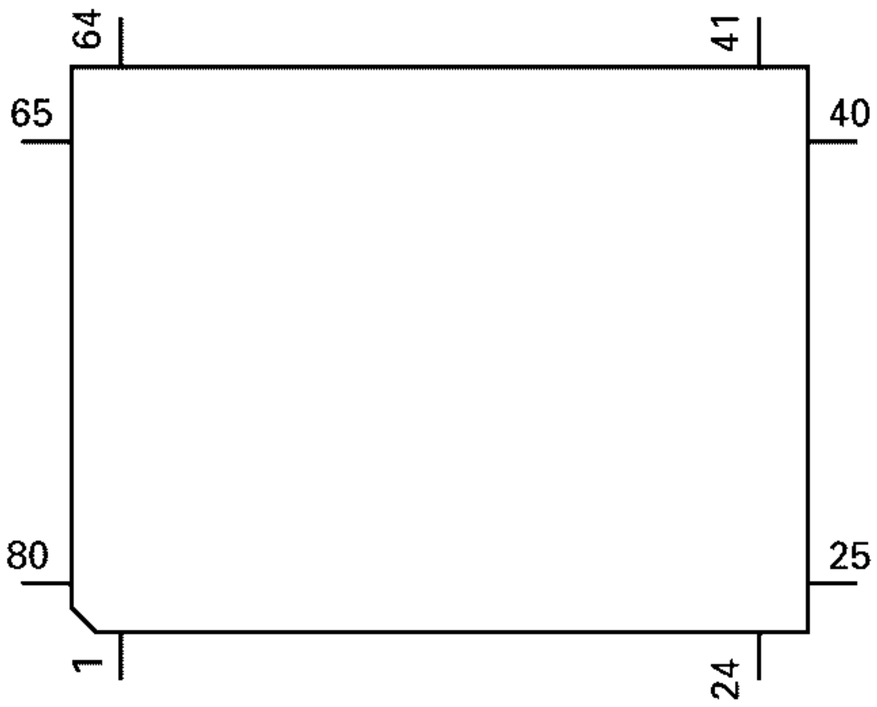


● Pin Functions (PD5396C)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	VDIN	I		Power supply short sensor input
2	NC			Not used
3	IPIN	I		IP-BUS serial data receiver
4	IPOUT	O	C	IP-BUS serial data transmission
5	IPPW	O	C	IP-BUS driver power supply control output
6	XA0	O	C	Control signal distinguishing data from microcomputer
7	XSCK	I/O	C	LSI clock input/output
8	XSO	O	C	LSI data output
9	XSI	I		LSI data input
10	$\overline{\text{XSTB}}$	O	C	CD LSI strobe output
11	$\overline{\text{XRST}}$	O	C	CD LSI reset output
12	$\overline{\text{DCE}}$	O	C	Chip enable output
13	NC			Not used
14	$\overline{\text{ASENS}}$	I		ACC power sense input
15	$\overline{\text{BSENS}}$	I		Back up power sense input
16–21	NC			Not used
22	$\overline{\text{EJSW}}$	I		Eject key switch interrupt input
23	$\overline{\text{MAG}}$	I		Magazine lock switch interrupt input
24	CNVSS			GND
25	$\overline{\text{RESET}}$	I		Reset input
26	POWER	O	C	CD +5V control
27	CONT	O	C	Server driver power control output (CD)
28	XIN	I		Crystal oscillating element connection pin
29	XOUT	O		Crystal oscillating element connection pin
30	VSS			GND
31–38	D7-D0	I/O	C	External RAM data line
39	$\overline{\text{WE}}$	O	C	External RAM write enable
40	$\overline{\text{PROT}}$	O	C	External RAM output enable

Pin No.	Pin Name	I/O	Format	Function and Operation
41	CS	O	C	External RAM chip select
42,43	NC			Not used
44–54	A10-A0	O	C	External RAM address line
55	NC			Not used
56	$\overline{6}$/12	I		6/12 switching input
57	NC			Not used
58	MIRR	I		Mirror detection input (CD)
59	LOCK	I		Spindle lock input (CD)
60	FOK	I		FOK signal input
61	$\overline{\text{CSEL}}$	I		Compression select
62–64	NC			Not used
65	I1,3	O	C	Motor driver control output
66	I2	O	C	Motor driver control output
67	I4	O	C	Motor driver control output
68	CDMUTE	O	C	CD mute control output (CD)
69	$\overline{\text{ADENA}}$	O	C	A/D reference voltage output
70	$\overline{\text{TESTIN}}$	I		Test program mode input
71	VCC			Power supply
72	VREF	I		A/D converter reference voltage input
73	AVSS			(A/D converter GND)
74	UNIT	I		UNIT input
75	U/$\overline{\text{L}}$	I		ELV position switch input
76	DISK			Disc detector and 8/12cm detect
77	ELVPVO	I		Slide voltage input for ELV detector
78	ELVREF	I		ELV reference voltage input
79	MSW	I		Disc detect timing and tray position input
80	NC			Not used

*PD5396C



Format	Meaning
C	C MOS

7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● Removing the Upper Case

1.Remove the eleven screws and then remove the upper case.

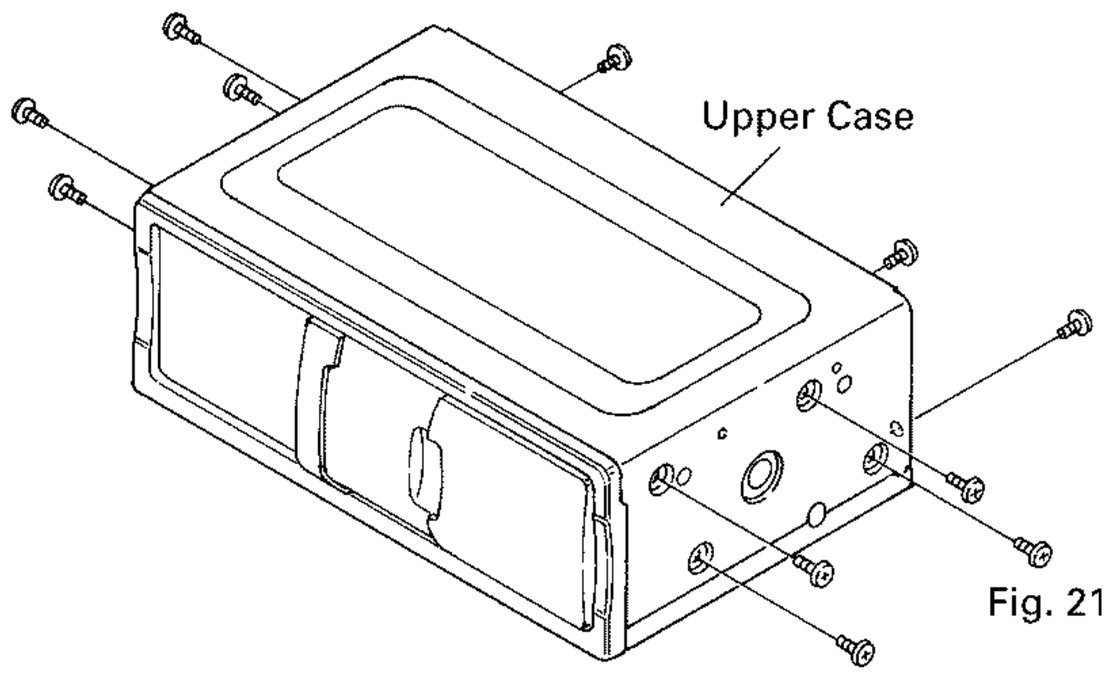


Fig. 21

● Removing the CD Mechanism Module

1.Remove the four dampers.
2.Remove the two springs.
3.Disconnect the connector and then remove the CD mechanism module.

● Removing the Grille Assy

1.Press the four tabs indicated by arrows and then pull out the grille assy.

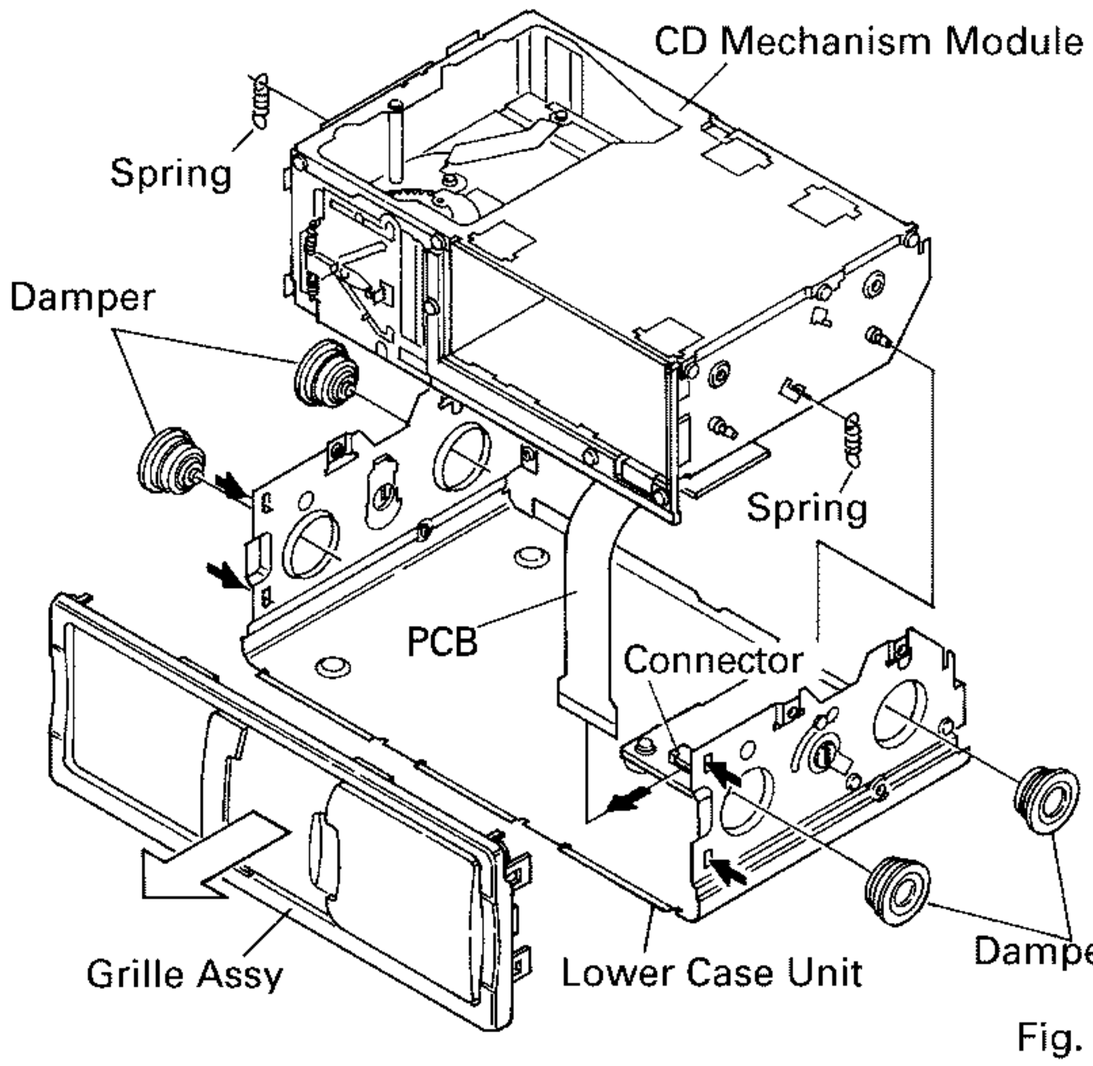


Fig. 22

● Removing the Extension Unit

1.Remove the two screws A and the screw B.
2. Stretch the claw indicated by arrow and then remove the extension unit.

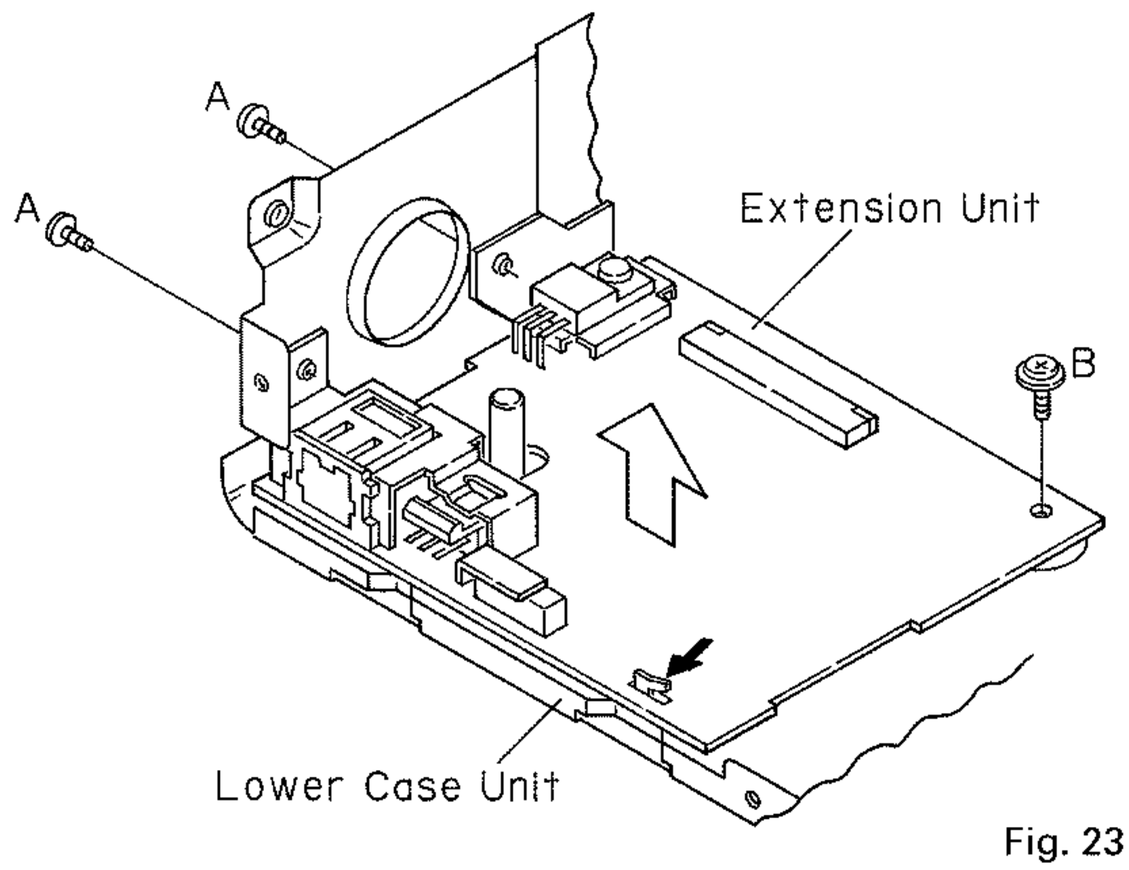
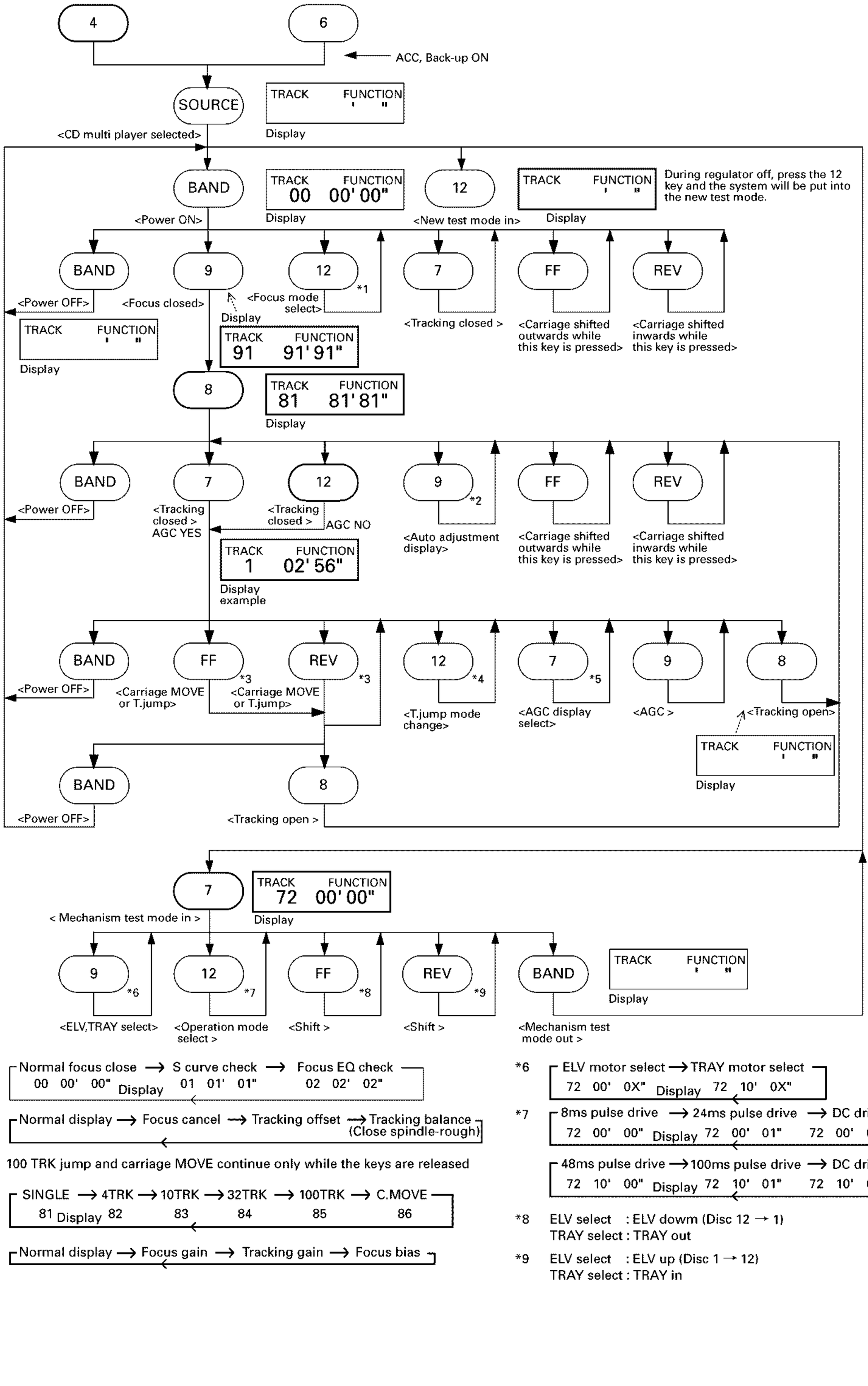


Fig. 23

7.2.2 TEST MODE

● Flow Chart



*1 Normal focus close → S curve check → Focus EQ check
00 00' 00" Display 01 01' 01" 02 02' 02"

*2 Normal display → Focus cancel → Tracking offset → Tracking balance (Close spindle-rough)

*3 100 TRK jump and carriage MOVE continue only while the keys are released

*4 SINGLE → 4TRK → 10TRK → 32TRK → 100TRK → C.MOVE
81 Display 82 83 84 85 86

*5 Normal display → Focus gain → Tracking gain → Focus bias

*6 ELV motor select → TRAY motor select
72 00' 0X" Display 72 10' 0X"

*7 8ms pulse drive → 24ms pulse drive → DC drive
72 00' 00" Display 72 00' 01" 72 00' 02"

48ms pulse drive → 100ms pulse drive → DC drive
72 10' 00" Display 72 10' 01" 72 10' 02"

*8 ELV select : ELV dowm (Disc 12 → 1)
TRAY select : TRAY out

*9 ELV select : ELV up (Disc 1 → 12)
TRAY select : TRAY in

● New Test Mode(aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number)

During the setup, the CD software operation status (internal RAM and C-point)is displayed.

(1) How to enter NEW TEST Mode

See the test mode flow chart Page 45.

(2) Relations of keys between TEST and NEW TEST Modes

Keys	Test Mode		New Test Mode		Mechanism Test Mode
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated	
BAND	Regulator ON	Regulator OFF	—	Time of occurrence/ cause of error select	Back to the test mode
FF	—	FWD-Kick	FF/TRACK+	—	Playing the mechanism
REV	—	REV-Kick	REV/TRACK-	—	Playing the mechanism
7	—	Tracking close	SCAN	—	Mechanism test mode in
8	—	Tracking open	MODE	—	—
9	—	Focus close	—	—	TRAY/ELV select
12	To New Test Mode	Jump Mode Select	AUTO/MANU	TRACK No./ time of occurrence select	Operation step select

Operations,such as EJECT, CD ON/OFF, etc. are performed normally

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause/Detail	
40	ELECTRIC	PLAY	FOK=L 100ms	Put out of focus	Scratch, Stain, Vibration, Servo defect, etc...
41	ELECTRIC	PLAY	LOCK=L 100ms	Spindle unlock	
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, Home switch failed
03	Carriage moving outwards	10-second time out, Home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10,14	Waiting for focus closure (FOK=H)	Failure to close focus
15, 16, 17	Focus closed, Tracking open	Focus disrupted
18	During focus AGC	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR, LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, Failure to lock, failed to read subcode

(5) Example of Display.

·SET UP in progress
8 digits display LCD

TNo.	Min	Sec
11	11	11

·Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

·Protection/Error upon occurrence(8 digits display LCD)

(a) Error number indicated

ERROR–xx

Select the display with the BAND key.

(b) Track number and absolute time indicated

TNo.	Min	Sec
10	40	05

● Error Number Indication

If the CD should fail to operate or if an error has taken place during operation the player will enter into the error mode, and the cause of the error will be numerically indicated.
This is aimed at assisting in analysis or repair.

(1) Basic Means of Display

·Examples of Display ERROR-xx

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
19	ELECTRIC	Set up failure	Tracking error waveform is too unbalanced (>50%) or level is too small →The P.U.unit or tracking error circuitry is N.G.
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal
A1	SYSTEM	Mechanism power failure	Mechanism elevation reference voltage is out of prescription →EREF adjustment VR and/or power abnormal
50	MECHANISM	An error upon ejection	MAG switch release time has time out Elevation time out when eject
60	MECHANISM	An error while putting in and out the tray	Tray in / out time has time out Tray is caught when put in
70	MECHANISM	An error upon elevation	Elevation time has time out
80	MECHANISM	An error with an empty magazine inserted	No disc is available

* Setup means a series of operations after focusing up to sound output.

7.3 BLOCK DIAGRAM

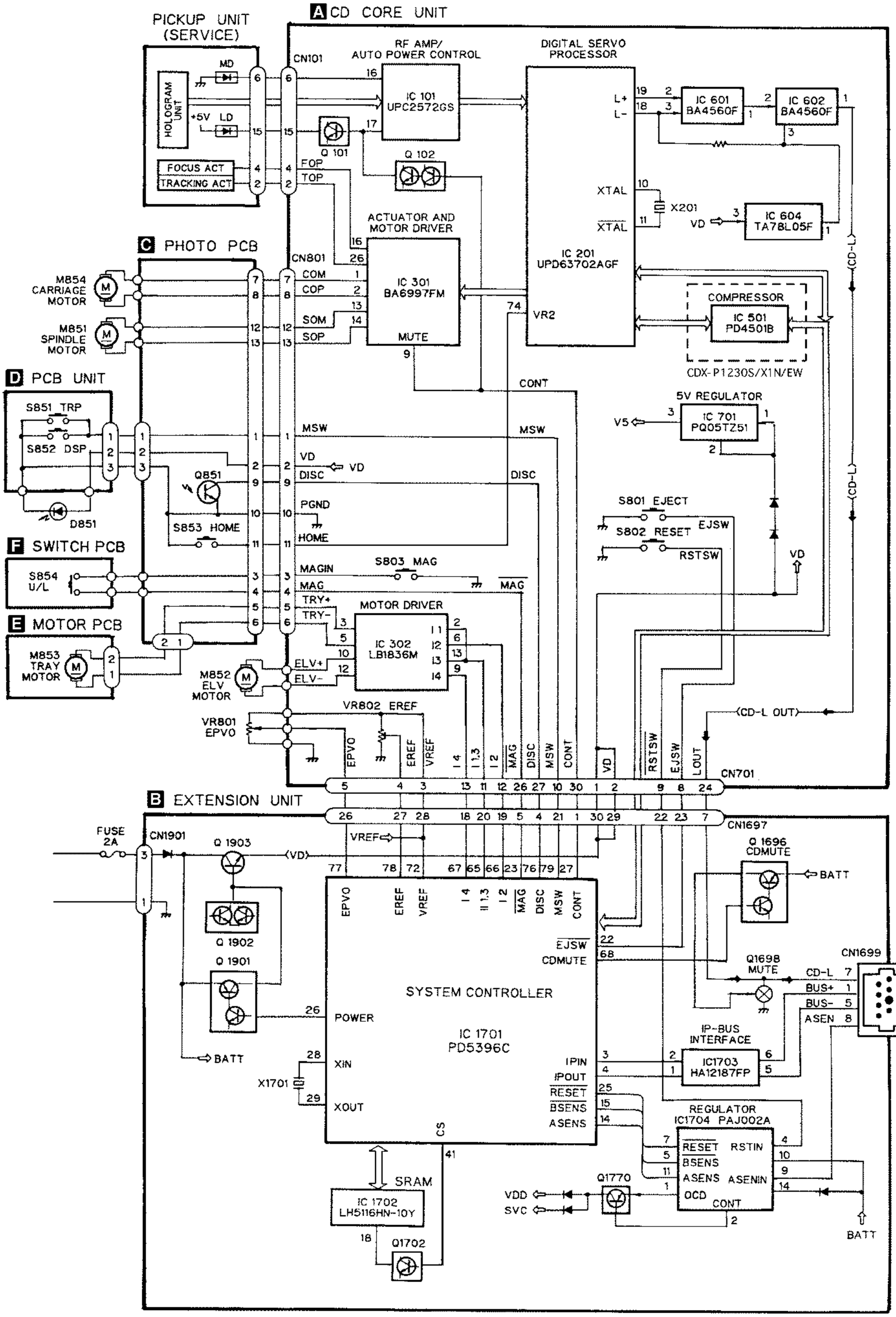


Fig. 24

8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATION

Connecting the Units

IP-BUS cable
To prevent incorrect connection, the input side of the IP-BUS connector is colored in blue, and the output side in black. Connect the connectors of the same colors correctly.

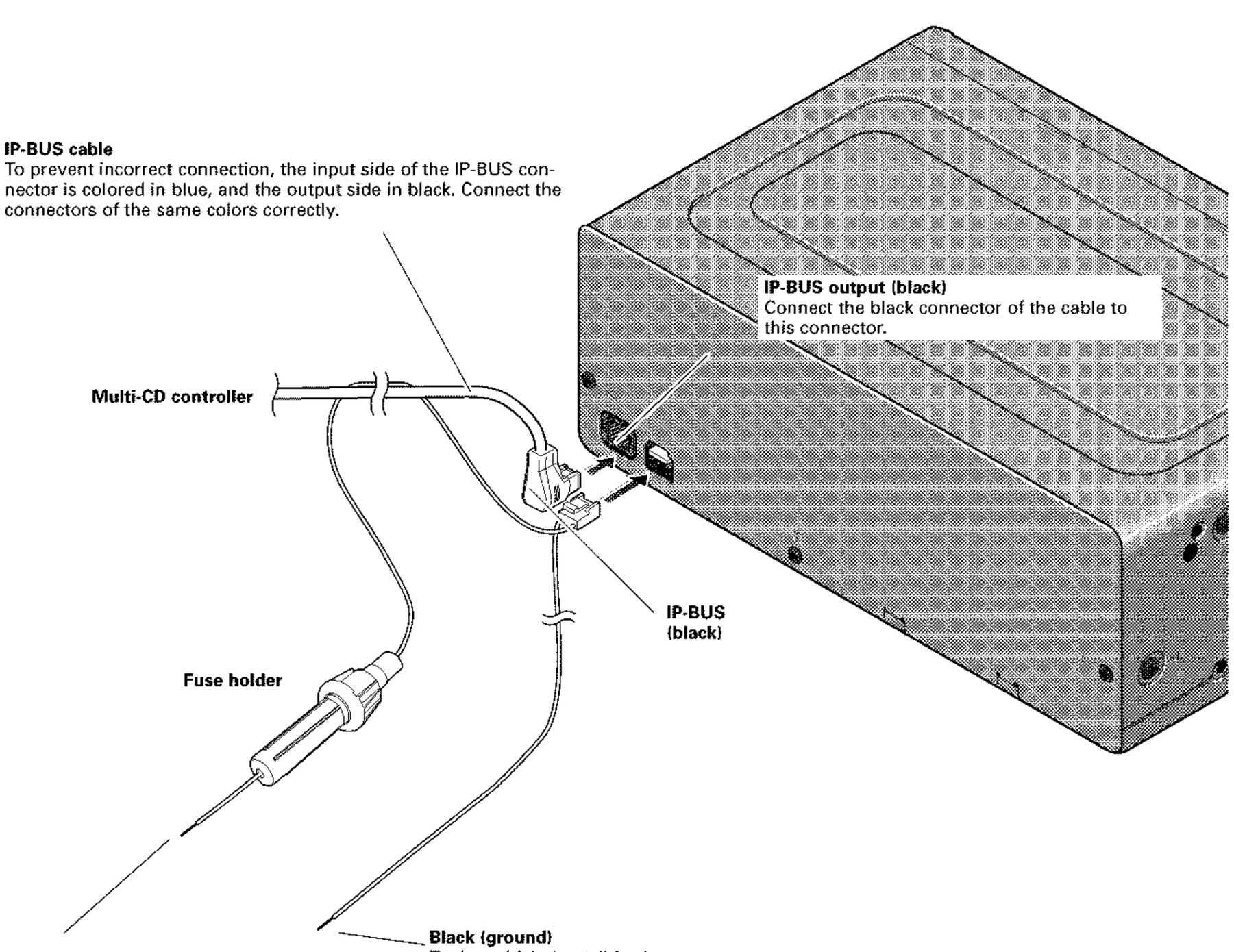

IP-BUS output (black)
Connect the black connector of the cable to this connector.
Multi-CD controller
IP-BUS (black)
Fuse holder
Orange
To the terminal always supplied with power regardless of ignition switch position.
Black (ground)
To the vehicle (metal) body.

Fig. 25